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THE HARMONY OF INTERESTS: AGRICULTURAL, MANUFACTURING, AND COMMERCIAL. BY H. C. CAREY.

"IRELAND, the type of this *free-trade* system, has millions of acres of her richest lands as yet untouched, that would alone, if drained and cultivated, yield food in abundance for the whole population." Is not this sentence alone, the truth of which will not be disputed, enough to excite the anxious attention of every American landholder; and to induce, not merely a readiness to read, but an impatience to understand the bearing of the two opposite systems—protection and free trade—on the value of that great machine to which, after all, men must look for individual comfort and national wealth—the mother and nurse of civilization and the arts? Assuredly no well-informed agriculturist, who properly appreciates the dependence of all other industries on the prosperity of his own, and who has the least perception of the liability of his pursuit to be improved or disparaged by the laws which regulate our commerce with foreign nations, will fail to appreciate his obligation to a writer who, without any personal interest in the matter, has gratuitously bestowed so much pains to elucidate a question which does not fall within the general range of the Farmer's studies.

As to the pretended readiness of England to enter fairly and fully on a system of free trade with other nations, of all bare-faced impostures, it is one of the grossest to be found in the whole catalogue of humbugs with which men and nations have been swindled from the beginning of the world. The free trade she offers is in productions for which she has no resource, or manufactures in which a long system of monopoly and cheap oppressed labour have given her superiority. Of all countries on earth, the United States is that which can with most impunity enter on a *bona-fide* system of free trade after protection (which is the only road to it) shall have begotten competition and perfection in the use of our really vast resources, as unlimited in variety as in abundance. To consent to enter on such a competition with England now would be like pitting a man, in the very act of pulling off his coat, to fight a boxer already stripped to the skin.

With her very narrow geographical limits and meager internal resources, England under a genuine system of free trade would at once sink into comparative insignificance from that height of grandeur and power which has been built up on her monopoly of machinery and commerce. This monopoly she has only maintained by an accumulation of 800 millions of debt, starving thousands, that a few may riot in luxury. How long will the world submit to her colonial policy, for which, to maintain or to resist! fleets and armies—those bloody sores of civilization—are maintained over the whole world?

By the favour of our correspondent, we shall continue these expositions, until the effect of protection and free trade, on all branches of industry and on all interests of society, are made apparent to the plainest "common sense."—*Editor P. L. and A.*

CHAPTER TWELFTH.

HOW PROTECTION AFFECTS THE LANDOWNER.

THE great saving fund is the land, and it is by the almost insensible contribution of labour that it acquires value. The first object of the poor cultivator of the thin soils is to obtain food and clothing for himself and his family. His leisure is given to the work of improvement. At one place he cuts a little drain, and at another he roots out a stump. At one moment he cuts fuel for his family, and thus clears his land, and at another digs

a well to facilitate the watering of his cattle, and thus keep his manure in the stable-yard. He knows that the machine will feed him better the more perfectly he fashions it, and that there is always place for his time and his labour to be expended with advantage to himself.

The land was given to man for his use, and the basis of the whole science of political economy is to be found in the law which governs his relation with this great and only machine of production. Mr. Ricardo taught that in the infancy of society men could command rich soils, from which they could obtain an abundant supply of food; but that with the growth of population food became more scarce, producing a necessity for dispersion in quest of those rich soils. The common sense of mankind teaches the contrary, and in this case, as in all others, the common sense of the many is right, while the uncommon sense of the few is wrong, as will be seen by all who will take the trouble to follow out the following sketch* of the gradual occupation of the earth:—

“The first cultivator commences his operations on the hill-side. Below him are lands upon which have been carried, by force of water, the richer portions of those above, as well as the leaves of trees, and the fallen trees themselves; all of which have there, from time immemorial, rotted and become incorporated with the earth, and thus have been produced soils fitted to yield the largest returns to labour: yet for this reason are they inaccessible. Their character exhibits itself in the enormous trees with which they are covered, and in their power of retaining the water necessary to aid the process of decomposition; but the poor settler wants the power either to clear them of their timber, or to drain them of the superfluous moisture. He begins on the hill-side; but at the next step we find him descending the hill, and obtaining larger returns to labour. He has more food for himself, and he has now the means of feeding a horse or an ox. Aided by the manure that is thus yielded to him by the better lands, we see him next retracing his steps, improving the hill-side, and compelling it to yield a return double that which he at first obtained. With each step down the hill he obtains still larger reward for his labour, and at each he returns, with increased power, to the cultivation of the original poor soil. He has now horses and oxen, and while by their aid he extracts from the new soils the manure that had accumulated for ages, he has also carts and wagons to carry it up the hill: and at each step his reward is increased, while his labours are lessened. He goes back to the sand and raises the marl, with which he covers the surface; or he returns to the clay and sinks into the limestone, by aid of which he doubles its product. He is all the time making a machine which feeds him while he makes it, and which increases in its powers the more he takes from it. At first it was worthless. It has fed and clothed him for years, and now it has a large value, and those who might desire to use it would pay him a large rent.

“The earth is a great machine, given to man to be fashioned to his purpose. The more he fashions it the better it feeds him, because each step is but preparatory to a new one more productive than the last; requiring less labour and yielding larger return. The labour of clearing is great, yet the return is small. The earth is covered with stumps, and filled with roots. With each year the roots decay and the ground becomes enriched, while the labour of ploughing is diminished. At length the stumps disappear, and the return is doubled, while the labour is less by one-half than at first. To forward this process the owner has done nothing but crop the ground: nature having done the rest. The aid he thus obtains from her yields him

* Originally published in my book. “The Past, the Present, and the Future.”

as much food as in the outset was obtained by the labour of felling and destroying the trees. This, however, is not all. The surplus thus yielded has given him means for improving the poorer lands by furnishing manure with which to enrich them, and thus he has trebled his original return without further labour; for that which he saves in working the new soils suffices to carry the manure to the old ones. He is obtaining a daily increased power over the various treasures of the earth.

"With every operation connected with the fashioning of the earth, the result is the same. The first step is, invariably, the most costly one, and the least productive. The first drain commences near the stream, where the labour is heaviest. It frees from water but a few acres. A little higher, the same quantity of labour, profiting by what has been already done, frees twice the number. Again the number is doubled, and now the most perfect system of thorough drainage may be established with less labour than was at first required for one of the most imperfect kind. To bring the lime into connection with the clay, upon fifty acres, is lighter labour than was the clearing of a single one, yet the process doubles the return for each acre of the fifty. The man who wants a little fuel for his own use, expends much labour in opening the neighbouring vein of coal. To enlarge this, so as to double the product, is a work of comparatively small labour; as is the next enlargement, by which he is enabled to use a drift wagon, giving him a return fifty times greater than was obtained when he used only his arms, or a wheelbarrow. To sink a shaft to the first vein below the surface, and erect a steam-engine, are expensive operations; but these once accomplished every future step becomes more productive, while less costly. To sink to the next vein below and to tunnel to another, are trifles in comparison with the first, yet each furnishes a return equally large. The first line of railroad runs by houses and towns occupied by one or two hundred thousand persons. Half a dozen little branches, costing together far less labour than the first, bring into connexion with it three hundred thousand, or perhaps half a million. The trade increases, and a second track, a third, or a fourth, may be required. The original one facilitates the passage of the materials and the removal of obstructions, and three new ones may now be made with less labour than was required for the first.

"All labour thus expended in fashioning the great machine, is but the prelude to the application of further labour with still increased returns. With each such application wages rise, and hence it is that portions of the machine, as it exists, invariably exchange, when brought to market, for far less labour than they have cost. The man who cultivated the thin soils was happy to obtain a hundred bushels for his year's work. With the progress of himself and his neighbour down the hill into the more fertile soils, wages have risen, and two hundred bushels are now required. His farm will yield a thousand bushels; but it requires the labour of four men, who must have two hundred bushels each, and the surplus is but two hundred bushels. At twenty years' purchase this gives a capital of four thousand bushels, or the equivalent of twenty years' wages; whereas it has cost, in the labour of himself, his sons, and his assistants, the equivalent of a hundred years of labour, or perhaps far more. During all this time, however, it has fed and clothed them all, and the farm has been produced by the insensible contributions made from year to year, unthought of and unfelt.

"It is now worth twenty years' wages, because its owner has for years taken from it a thousand bushels annually; but when it had lain for centuries accumulating wealth, it was worth nothing. Such is the case with the earth everywhere. The more that is taken from it, the more there is left. When the coal mines of England were untouched, they were valueless.

Now their value is almost countless; yet the land contains abundant supplies for thousands of years. Iron ore, a century since, was a drug, and leases were granted at almost nominal rents. Now, such leases are deemed equivalent to the possession of large fortunes, notwithstanding the great quantities that have been removed, although the amount of ore now known to exist is probably fifty times greater than it was then.

"The earth is the sole producer. Man fashions and exchanges. A part of his labour is applied to the fashioning of the great machine, and this produces changes that are permanent. The drain, once cut, remains a drain; and the limestone, once reduced to lime, never again becomes limestone. It passes into the food of man and animals, and ever after takes its part in the same round with the clay with which it has been incorporated. The iron rusts and gradually passes into soil, to take its part with the clay and the lime. That portion of his labour gives him wages while preparing the machine for greater future production. That other portion which he expends on fashioning and exchanging *the products* of the machine, produces temporary results, and gives him wages alone. Whatever tends, therefore, to diminish the quantity of labour necessary for the fashioning and exchanging of the products, tends to increase the quantity that may be given to increasing the amount of products, and to preparing the great machine; and thus, while increasing the present return to labour, preparing for a future further increase.

"The first poor cultivator obtains a hundred bushels for his year's wages. To pound this between two stones requires twenty days of labour, and the work is not half done. Had he a mill in the neighbourhood he would have better flour, and he would have almost his whole twenty days to bestow upon his land. He pulls up his grain. Had he a scythe, he would have more time for the preparation of the machine of production. He loses his axe, and it requires days of himself and his horse on the road, to obtain another. His machine loses the time and the manure, both of which would have been saved, had the axe-maker been at hand. The real advantage derived from the mill and the scythe, and from the proximity of the axe-maker, consists simply in the power which they afford him to devote his labour more and more to the preparation of the great machine of production, and such is the case with all the machinery of preparation and exchange. The plough enables him to do as much in one day as with a spade he could do in five. He saves four days for drainage. The steam-engine drains as much as without it could be drained by thousands of days of labour. He has more leisure to marl or lime his land. The more he can extract from his machine the greater is its value, because every thing he takes is, by the very act of taking it, fashioned to aid further production. The machine, therefore, improves by use; whereas spades, and ploughs, and steam-engines, and all other of the machines used by man, are but the various forms into which he fashions parts of the great original machine, to disappear in the act of being used; as much so as food, though not so rapidly. The earth is the great labour savings' bank, and the value to man of all other machines is in the direct ratio of their tendency to aid him in increasing his deposits in the only bank whose dividends are perpetually increasing, while its capital is perpetually doubling. That it may continue for ever so to do, all that it asks is that it shall receive back the refuse of its produce, the manure; and that it may do so, the consumer and the producer must take their places by each other. That done, every change that is effected becomes permanent, and tends to facilitate other and greater changes. The whole business of the farmer consists in making and improving soils, and the earth

rewards him for his kindness by giving him more and more food the more attention he bestows upon her.

The solitary settler has to occupy the spots that, with his rude machinery, he *can* cultivate. Having neither horse nor cart, he carries home his crop upon his shoulders, as is now done in many parts of India. He carries a hide to the place of exchange, distant, perhaps, fifty miles, to obtain for it leather or shoes. Population increases, and roads are made. More fertile soils are cultivated. The store and the mill come nearer to him, and he obtains shoes and flour with the use of less machinery of exchange. He has more leisure for the preparation of his great machine, and the returns to labour increase. More people now obtain food from the same surface, and new places of exchange appear. The wool is, on the spot, converted into cloth, and he exchanges directly with the clothier. The saw-mill is at hand, and he exchanges with the sawyer. The tanner gives him leather for his hides, and the paper-maker gives him paper for his rags. With each of these changes he has more and more of both time and manure to devote to the preparation of the great food-making machine, and with each year the returns are larger. His *power to command* the use of the machinery of exchange increases, but his *necessity* therefor diminishes; for with each year there is an increasing tendency towards having the consumer placed side by side with the producer; and with each he can devote more and more of his time and mind to the business of fashioning the great instrument; and thus the increase of consuming population is essential to the progress of production.

"The loss from the use of machinery of exchange is in the ratio of the bulk of the article to be exchanged. Food stands first; fuel, next; stone for building, third; iron, fourth; cotton, fifth; and so on; diminishing until we come to laces and nutmegs. The raw material is that in the production of which the earth has most co-operated, and by the production of which the land is most improved; and the nearer the place of exchange or conversion can be brought to the place of production, the less is the loss in the process, and the greater the power of accumulating wealth for the production of further wealth.

"The man who raises food on his own land is building up the machine for doing so to more advantage in the following year. His neighbour, to whom it is *given*, on condition of sitting still, loses a year's work on his machine, and all he has gained is the pleasure of doing nothing. If he has employed himself and his horses and wagon in bringing it home, the same number of days that would have been required for raising it, he has misemployed his time, for his farm is unimproved. He has wasted labour and manure. As nobody, however, gives, it is obvious that the man who has a farm and obtains his food elsewhere, must pay for raising it, and pay also for transporting it; and that although he may have obtained as good wages in some other pursuit, his farm, instead of having been improved by a year's cultivation, is worse by a year's neglect; and that he is a poorer man than he would have been had he raised his own food.

"The article of next greatest bulk is fuel. While warming his house, he is clearing his land. He would lose by sitting idle, if his neighbour brought his fuel to him, and still more if he had to spend the same time in hauling it, because he would be wearing out his wagon and losing the manure. Were he to hire himself and his wagon to another for the same quantity of fuel he could have cut on his own property, he would be a loser, for his farm would be uncleared.

"If he take the stone from his own fields to build his house, he gains doubly. His house is built, and his land is cleared. If he sit still and let

his neighbour bring him stone, he loses, for his fields remain unfit for cultivation. If he work equally hard for a neighbour, and receive the same apparent wages, he is a loser by the fact that he has yet to remove the stones, and until they shall be removed he cannot cultivate his land.

"With every improvement in the machinery of exchange there is a diminution in the proportion which that machinery bears to the mass of production, because of the extraordinary increase of product consequent upon the increased power of applying labour to building up the great machine. It is a matter of daily observation that the demand for horses and men increases as railroads drive them from the turnpikes, and the reason is, that the farmer's means of improving his land increase more rapidly than men and horses for his work. The man who has, thus far, sent to market his half-fed cattle, accompanied by horses and men to drive them, and wagons and horses loaded with hay or turnips with which to feed them on the road, and to fatten them when at market; now fattens them on the ground, and sends them by railroad ready for the slaughter-house. His use of the machinery of exchange is diminished nine-tenths. He keeps his men, his horses and his wagons, and the refuse of his hay or turnips, at home. The former are employed in ditching and draining, while the latter fertilizes the soil heretofore cultivated. His production doubles, and he accumulates rapidly, while the people around him have more to eat, more to spend in clothing, and accumulate more themselves. He wants labourers in the field, and they want clothes and houses. The shoemaker and the carpenter, finding that there exists a demand for their labour, now join the community, eating the food on the ground on which it is produced; and thus the machinery of exchange is improved, while the quantity required is diminished. The quantity of flour consumed on the spot induces the miller to come and eat his share, while preparing that of others. The labour of exchanging is diminished, and more is given to the land, and the lime is now turned up. *Tons* of turnips are obtained from the same surface that before gave *bushels* of rye. The quantity to be consumed increases faster than the population, and more mouths are needed on the spot, and next the woollen mill comes. The wool no longer requires wagons and horses, which now are turned to transporting coal, to enable the farmer to dispense with his woods, and to reduce to cultivation the fine soil that has, for centuries, produced nothing but timber. Production again increases, and the new wealth now takes the form of the cotton-mill; and, with every step in the progress, the farmer finds new demands on the great machine he has constructed, accompanied with increased power on his part to build it up higher and stronger, and to sink its foundations deeper. He now supplies beef and mutton, wheat, butter, eggs, poultry, cheese, and every other of the comforts and luxuries of life, for which the climate is suited; and from the same land which afforded, when his father or grandfather first commenced cultivation on the light soil of the hills, scarcely sufficient rye or barley to support life."

If we undertake to study anywhere the cause of value in land, it will be found to result from diminution in the cost of transportation. The newspapers of the day, in speaking of the operations of the railroad recently constructed from Springfield (Illinois) to the Illinois river, tell us that

"One week before the railroad was finished, corn could be had here in any quantity, at 15 cents a bushel. Not a bushel can now," says the Sangamon Journal, "be had for less than 25 cents. This," it adds, "is the effect of the completion of the railroad on the price of one article of the products of our farmers."

The first thing to be paid by land is transportation. When that is so great as to eat up the whole proceeds, the land will remain uncultivated.

Diminish the cost of transportation so as to leave sufficient to pay the wages of labour, and it will be cultivated, but it will pay no rent. Diminish it further, so as to leave a surplus over and above the reward of the labourer, and the land itself will acquire value. Diminish it still further, by removing altogether the necessity for transportation, making a market on the land for all the products of the land, enabling the farmer readily to return to it all the refuse of its products, and it will acquire the highest value of which land is capable. The commodity of which the government and people of the Union have most to sell is land. In quantity it is practically unlimited, and long before our present territory shall have been even laid out for sale, vast countries will have been brought within the limits of the Union. In quality it is entitled to stand first in the world. The area of the coal region is 133,000 square miles. Iron ore is everywhere, untouched. Copper, zinc, and almost all other metals abound. South Carolina has millions of acres of the finest meadow-land unoccupied, and she has lime and iron ore in unlimited abundance. Virginia is in a similar condition, and yet people are leaving both, when population is all that is needed to place them in the first rank among the States of the Union in point of wealth. Of the three States of Alabama, Louisiana, and Mississippi, with advantages unrivalled for the production of the great clothing material of the world, two-thirds of their whole surface, or 83,000,000 of acres, yet remain unsold. The land at the command of the government counts by hundreds of millions, and to give to all this value we need only population.

In Europe, on the contrary, population is held to be superabundant. Marriage is regarded as a luxury, not to be indulged in, lest it should result in increase of numbers. "Every one," it is said, "has a right to live," but this being granted, it is added that "no one has a right to bring creatures into life to be supported by other people."* Poor laws are denounced, as tending to promote increase of population—as a machine for supporting those who do not work "out of the earnings of those who do."† No man, it is thought, has "a right" to claim to have a seat at the great table provided by the Creator for all mankind, or that "if he is willing to work he must be fed." Labour is held to be a mere "commodity," and if the labourer cannot sell it, he has no "right" but to starve—himself, his wife, and his children. "The particular tendency to error apparent in the prevalent social philosophy of the day," to which it is deemed necessary to direct special attention, is "the unsound, exaggerated, and somewhat maudlin tenderness with which it is now the fashion to regard paupers and criminals."‡ Such are the doctrines of the free-trade school of England, in which Political Economy is held to be limited to an examination of the laws which regulate the production of wealth, without reference to either morals or intellect. Under such teaching it is matter of small surprise that pauperism and crime increase at a rate so rapid.§

Throughout Europe, men are held in low esteem. They are considered to be surplus, and the sooner they can be expelled the better it will be for those who can afford to remain behind. To accomplish this object, Colonization Societies are formed, and Parliament is memorialized by men who desire to export their fellow-men by hundreds of thousands annually. Whig and Tory journals|| unite in urging the necessity for expelling man from the

* J. S. Mill's *Principles of Political Economy*.

† *Edinburgh Review*, October, 1849.

‡ *Ibid*.

§ See article on Transportation, *Blackwood's Magazine*, November, 1849.

|| The number of *Blackwood's Magazine*, just received, advocates the application of £300,000 per annum to this object.

land of Britain. Secretaries of State furnish ingenious calculations as to the amount required for accomplishing the work of expulsion. On all hands, it is agreed that men are too numerous, and that their numbers grow too fast, and yet there is not a country in Europe that can justly complain of over-population. Ireland, the type of this *free-trade* system, has millions of acres of her richest lands as yet untouched, that would alone, if drained, yield food in abundance for the whole population.

It is not, however, the labourer alone that stands in need of aid. The condition of the land-owner is little better. This system of universal discord is thus described in one of the journals of the day:

"The state of the country is frightful. The assassinations are computed at more than ten per week, half a hundred per month, which, added to the systematic starvation of almost another hundred, in the same time, gives a state of things without parallel in modern civilization. With this diminution of the people, the million of work-house inmates and dependents increases. In less than a month it will be more than a proprietor's life is worth to be seen by his tenantry. Rents, which of course are nominal in collection, have, therefore, lately sunk to the fourth of their nominal amount. Lands, let hitherto at £2 10s. per acre, are offered at less than 15s; and such is the exasperation of the starving millions, that the landlords are afraid further to aggravate their sufferings."

The Parliament of England is now engaged in passing laws to transfer, for the fourth time in little more than two centuries, the mass of Irish property to English undertakers. The little cultivator of land has been ruined. Labour has become utterly valueless, although labour alone is needed to bring into cultivation 7,000,000 of acres of the richest soils in the world, now unproductive.

The land-owner of India has been ruined. The immense body of village proprietors that but half a century since existed in that country, helping and governing themselves, has disappeared.

The land-owner of the West Indies—of Demerara and Berbice—has been ruined, and the condition of the labourers has not been improved.

The land-owner of Portugal—the continental colony of Great Britain—has been ruined, and with diminished value of land there has been steady deterioration of civilization, until the name of Portugal has become almost synonymous with weakness and barbarism.

If we look to Canada, Nova Scotia, or New Brunswick, the same picture meets our view. "Land of the same quality, at one minute north of the imaginary line dividing the provinces from the Union, is worth less than half as much as that which is one minute south of it. Lord Durham, in his report, made but a few years since, says that "land in Vermont and New Hampshire, close to the line, is five dollars per acre, and in the adjoining British townships, only one dollar," and that on the northern side of the line, with superior fertility, it is "wholly unsaleable even at such low prices." Canada has no market on the land for the products of the land, and the cost of transportation eats up the product, much of which is absolutely wasted because it cannot go at all to market. The labour of men, women, and children, and that of wagons and horses, is everywhere being wasted, and therefore it is that the Canadian desires a change of government that will enable him to obtain a protective tariff. Give him that—annex him to the Union—and his land will acquire value similar to that of the Union. Farmers will then grow rich, and labourers will grow rich, and the power to consume cloth and iron will grow with the same rapidity with which it recently grew with us.

Every colony of England would gladly separate from her, feeling that connection with her is synonymous with deterioration of condition. Every one would gladly unite its fortunes with those of our Union, feeling that

connection with us is synonymous with improvement. The reason for all this is, that the English system is based upon cheap labour, and tends to depress the many for the benefit of the few. In our system, it is the many who govern; and experience having taught them that prosperity and free trade with England are inconsistent with each other, we have "free trade" tariffs with protective duties of thirty per cent., and likely to be increased. The colonies are ruined by free trade, and they desire annexation, that they may have protection.

This idea of cheap labour is universal among English colonists. It is found in all their books. If they fail to succeed, it is because labour is "too high." They are willing to receive convicts, because they can be had "cheap." They tell their correspondents that men may be had from the Continent who will work for small wages, while Englishmen must have large ones, *i. e.* enough to feed and clothe themselves comfortably. They emancipate the negroes, and then they find their labour "too dear," and send to India, or to the coast of Africa, for "cheap" labourers. The *Times* informs us that the great works of England are based upon an ample supply of "cheap labour." The whole system looks to the degradation of the labourer, by requiring him to underwork and supplant the labourer of other countries, with all the disadvantage of distance and heavy cost of transportation. Protection looks to raising the value of labour, and thus promoting the annexation of individuals, and the establishment of perfect free trade between ourselves and the people of Europe by inducing them to transfer themselves to our shores. It is a bounty on the importation of the machine we need—man—to give value to the machine we have in such abundance—land. It leads to perfect free trade—the annexation of nations—by raising the value of man throughout the world.

It has been, at times, matter of surprise that the hundreds of thousands who have arrived in this country have been so instantly absorbed that their presence has been unfelt, and that the more we received, the larger was the quantity of food, fuel, cloth, and iron given in exchange for labour, but such is the natural result of a system which tends to enable the miner and the worker in iron, the spinner and the weaver, to combine their exertions with those of the farmer and planter. Had the policy of 1828 remained unchanged, and were we now receiving a million of men, the only effect that would be observed, would be that wages and profits, and the power of labourer, landowner, and capitalist, to command the good things of life would be steadily increasing, and with each step forward the tendency to immigration and to increase in the value of land would grow with accelerated pace. We need population.

In the thorough adoption of this course by the people of the Union, is to be found the remedy of the ills of both the land-owners and the labourers of the rest of the world, and the removal of the discords now so universal. That we may clearly see how it would contribute towards producing harmony, we must first inquire into the causes of discord.

The labourers of the world have one common interest, and that is that labour should become everywhere productive and valuable. The more wheat produced in return to a given quantity of labour, the more of it will the shoemaker obtain for his work, and the more advantageously the shoemaker can apply his labour, the more readily will the farmer provide himself and his family with shoes. Such, likewise, is the case with nations. It is to the interest of all that labour in all should become productive, and if the labour of the cotton-growing nation become unproductive, that of the sugar or wheat-growing nation feels the effect in an increased difficulty of obtaining clothing.

The land-owners of the world have one common interest, and that is, that land should everywhere become productive and valuable. It does so become with every increase in the skill and intelligence of the labourer, as may be seen by a comparison of times present with times past in every improving country, or by a comparison of the various countries of the world at the present moment. In Russia land itself has little value. In Belgium, where cultivation is carried on with intelligence elsewhere unknown, it has great value.

Every increase in the facility of obtaining cloth for food, or food for cotton, diminishes the quantity of labour to be given for food or clothing, and enables the producer to obtain other commodities and things needed for the improvement of his mind, or which tend to enable him more advantageously to apply his labour. The landed proprietor of England is therefore directly interested in the improvement of the mode of cultivating cotton in the United States, because it tends to improve the condition of the man who labours on his land; and the cotton-grower is interested in the improvement of the wheat-grower of Russia, because the latter is thereby enabled to purchase more clothing.

Among the land-owners and labourers of the world there is, therefore, perfect harmony of interests. Between them stand the men employed in the work of transportation, conversion and exchange—ship-owners, manufacturers, and merchants.

The object had in view in the prohibition of manufactures in the colonies was that of compelling the colonists to use ships that they would not otherwise require, and to pay manufacturers and merchants for doing for them those things that they could have better done themselves. The necessary consequence of this was discord, which in our case led to war, and vast waste of time and money. Another consequence was, that the people engaged in the work of transportation, conversion, and exchange, increased more rapidly than the producers, and England, from having food to sell, became a purchaser of foreign food. Next came the corn-laws, by which the importation of food was to be prevented, for the benefit of land-owners, and other laws prohibiting the export of machinery, for the benefit of the owners of ships and machinery of various kinds. By the one the owners of land were enabled to tax the labourer and the mechanic, and by the other the mechanic was enabled to tax the world in return. The effect has been that of preventing the application of English labour and capital to the work of production, and driving it into the far less profitable work of transportation, conversion, and exchange, to such an extent that the converters have at length become masters of the land-owners, and have abolished restrictions on the import of food which the latter had established for their protection, and as revolutions never go backward, we may fairly conclude that the corn-laws will not be re-established. The result, thus far, has been to ruin the landholders of Ireland, and the next result must be to ruin those of England, if the system be allowed fair play.

The people of Russia, we are assured, have been compelled to waste food for want of a market. Rather than do this, they would give a bushel of wheat for a yard of cloth. That they cannot afford to do this, we are assured; but what else can they do? If they cannot make cloth they must buy it, and they must give an equivalent, and if that be even bushels for yards, they must give them. Until Russia can make a market for this now surplus food, it will seek a market at any price, and the price in England cannot much exceed the cost of transportation between the farm on which it was produced and the town at which it is consumed. Nearly the whole of that price must go to the exchanger, to the loss of both land and labour,

both of which must tend towards the Russian level, now a very low one, because of the absence of a market on the land for the products of the land.

The object of the now dominant class in England is that of bringing about free trade with the world. Such a measure adopted by this country would close every furnace and rolling-mill, and every cotton and woollen factory in the country, and would diminish the value of both labour and land, by compelling the producer of food to seek a market in England. Similar measures adopted by the *Zoll-verein*, would compel the people of Germany to do the same, attended with similar results. The market of England would be borne down with the weight, and the price would fall so low as utterly to destroy the power of the labourer on land to pay rent for its use, and the power of the owner to improve it. The class intermediate between the producers in various parts of the world, would daily grow in numbers and strength, and the productiveness of labour and land would daily diminish, with steady diminution in the value of both.

On the other hand, let us suppose the people of the Union, of Russia, and of Germany, to adopt such measures as would enable them to consume on the land the whole of the food produced upon the land, and thus to put a stop to the enormous imports by which the English agriculturist is now being crushed. The immediate effect would be that the labour and land of all those countries would rise in value, and therewith there would be an increase in the value of both in England. The demand for labour here would speedily drain off the surplus hands employed in factory labour, and the increased demand for home-grown food would induce the application of labour and capital to production,* and the value of both would rise. Consumption would increase as labour became more productive, and the power of the producers would be restored, while that of the mere exchangers would be diminished.

To the improvement of the condition of labour and land in the United Kingdom the abolition of the colonial system is essential. Its maintenance involves the payment of taxes to an amount that is terrific, *all of which must be paid by the producers and those who own the machine of production, abroad or at home.* The tax that is nominally paid by the man who sells the wheat, or by him who transports it, is really paid by the man who produces it, and by him that consumes it. Three-fourths of the nation are engaged in the work of transporting, converting, or exchanging the products of others, adding nothing whatever to the quantity produced, while living out of it, and thus deteriorating the condition of the land-owners and labourers of England and of the world.

The land-owners of England have been the legislators of England. They made the system which produced our revolution—that which has depopulated India, and must ruin every country subjected to it—and they are now paying the penalty. Each step towards the degradation of the people by whom they were surrounded has been attended by loss of power in themselves. Their policy has converted the little occupant into the hired labourer, and the labourers on land into the tenants of lanes and alleys in Liverpool and Manchester. Throughout much of Scotland they have substituted sheep for the men whom they have driven to take refuge in Glasgow, and with each such step they have weakened themselves, converting

* At a recent meeting in London, Dr. Buckland asserted that the product of all the clay lands of England might be doubled by a moderate expenditure for drainage.

† The greatest crowding of population in a neighbourhood is in a district in Liverpool, England, containing a population of 8000 on 49,000 square yards of ground, being in the proportion of 657,963 to a square mile.

those who were their own support into the tools of those who live at the cost of both. The exchanger has set his foot upon their necks. *Commerce is King*. They are prostrate, and so they must remain until they shall have help from abroad. Their natural allies are the land-owners of the rest of the world. The East India Company, as the great land-owner of India, is greatly interested. That country is becoming daily less and less able to pay taxes, and the power so to do must diminish with the continuance of the system. Were the machinery now employed in converting cotton into cloth for India employed in making cloth in India, thus making a market on the land for its products, the culture of cotton would revive, the demand for food would increase, population would grow, and jungle would be cleared, and the Company might then obtain a constantly increasing rent from taxes constantly decreasing in their weight, paid by a people constantly improving in condition. The price of labour would rise, and the necessity for armies would diminish, and the Company might then, at no distant period, sell out its establishments to a people who would thereafter govern themselves.

It is to the people of the United States, however, that they must chiefly look for help. Owners already of the chief part of North America, they are likely soon to own the whole. The *national*, not party or sectional, adoption of the protective policy would at once raise the value of land throughout the Union, because it would then be felt that a market would everywhere be made on the land for the products of the land. The British provinces would then speedily be incorporated into the Union, and the supply of food to British markets would cease; Cuba and Mexico would follow, and thus would be made a market for the population of all Southern Europe; and with each such step the value of labour would rise, followed by a necessity, on the part of the landholders everywhere, for an effort to retain their rent-payers, if they would preserve the value of their land. Spain and Italy would become manufacturers for themselves, and thus the colonial system would gradually pass out, and with it the power of the exchangers over the labourers and land-owners.

It is not by immigration alone that the population of the Union would be augmented, and increased value given to the land which so much abounds. The present system degrades the country to build up great cities, to become the resort of tens of thousands who would have remained at home among parents and friends, had furnaces, rolling-mills, cotton or woollen mills afforded them employment for time and mind. The same cause compels another portion to fly to the West; and while, in the one case, we have the poverty, vice, and disease of crowded cities, in the other we have those of scattered population; and men, women, and children starve in New York, while other men, women, and children perish of fevers incident to the occupation of new countries in advance of the arrangements that would have resulted from the more gradual extension of the area of settlement. It will be said that here is discord. If the city population did not grow, what would become of the owners of city lots? The harmony of interests is here, as everywhere else, perfect. Towns and cities would grow more rapidly than ever, but they would grow more healthfully, preserving a nearer relation to the population of the country, whose trade they desired to perform. New York would cease to be, as now, a great wen, absorbing all the profits of hundreds of thousands of the poor farmers, her customers, who give ten days' labour employed in raising corn for the labour of one day employed in producing British iron. The country and the city would grow together, and the jealousy of the country towards the city would speedily pass away.

The people of China constitute a world of themselves. They have little

intercourse with the exterior world, nor is the example of Hindostan likely to produce any desire for its extension: certainly not, while they shall continue to recollect that their desire to prohibit the importation of opium involved them in a war that resulted in the destruction of cities and the ruin of hundreds of thousands of innocent people. The system of that country is directly the reverse of ours, in the fact that the government is in the hands of one, while here it is in the hands of all. In this, it labours under infinite disadvantage, yet the spectacle there presented of the results of combined action puts to shame our boasted civilization. A recent writer thus describes the condition of the people:—

"The farms are small, each consisting of from one to four or five acres, indeed, every cottager has his own little tea garden, the produce of which supplies the wants of his family, and the surplus brings him in a few dollars, which are spent on the other necessities of life. The same system is practised in every thing relating to Chinese agriculture. The cotton, silk, and rice farms, are generally all small, and managed upon the same plan. There are few sights more pleasing than a Chinese family in the interior engaged in gathering the tea-leaves, or, indeed, in any of their other agricultural pursuits. There is the old man, it may be the grandfather, or even the great-grandfather, patriarch-like directing his descendants, many of whom are in their youth and prime, while others are in their childhood, in the labours of the field. He stands in the midst of them, bowed down with age. But, to the honour of the Chinese as a nation, he is always looked up to by all with pride and affection, and his old age and gray hairs are honoured, revered and loved. When, after the labours of the day are over, they return to their humble and happy homes, their fare consists chiefly of rice, fish and vegetables, which they enjoy with great zest, and are happy and contented. I really believe there is no country in the world where the agricultural population are better off than they are in the north of China. Labour with them is pleasure, for its fruits are eaten by themselves, and the rod of the oppressor is unfelt and unknown."*

Let this be compared with the results of the system that has desolated Ireland and India, and that drives our people to Oregon and California, while men are everywhere, among ourselves, half-cultivating large farms, when they might obtain treble the result from half the surface, and let it then be determined which is the one that tends most to promote the prosperity and happiness of the labourer, and to improve the condition of the owner of land.

The policy of England tending to dispersion, she desires to facilitate the making of roads by which all the commodities of the world may be brought to her, thence to be returned to the places from whence they came, retaining so large a portion as to cause the destruction of the land and its owner. Lower India is utterly exhausted, and England desires railroads to more distant points, which will be then exhausted in their turn. From 1834 to 1840 she lent us iron to make roads in new countries, and we were ruined by dispersion. From 1843 to 1847, we filled up the spaces, the policy being that of concentration, and we grew rich. The present policy is that of dispersion. It is proposed to make a railroad to the Pacific, that men may scatter themselves more widely, although we now occupy a space that would be sufficient for almost the population of the world, if properly cultivated. The more roads we make in the now-settled States, the richer and stronger we shall grow, and the greater will be the value of land. The more roads we make in yet unsettled lands, the poorer and weaker we shall grow, and the less will be the value of land. It behooves the farmer, then, to look carefully to every scheme for promoting dispersion.

The value of labour and of capital is dependent on the quantity of both that can be given to the work of production. Every increase in the quan-

* Fortune's Wanderings in China.

tity of either required to be given to the work of conversion and transportation, tends to diminish the value of all. Every diminution in the quantity tends to increase the value of all. The nearer the consumer and the producer can be brought together, the greater is the quantity of capital and labour that can be given to the work of production, the smaller is that which is required for transportation, and the more rapid is the advance in the value of both labour and land.

We are now separating the consumer from the producer, and the consequence is, that five per cent. stocks are at par, land is cheap, and wages are low. Were the tariff of 1842 re-enacted, interest would rise to six per cent. and labour would command a large return—the consequence of which would be a great increase in the consumption of food, and wool, and cotton, and the value of land would rise.

The annexation of a million of people, emigrants from Europe, to our community, establishes free trade with them. The annexation of the land and the people of Canada, and the other British possessions, would enlarge the domain of perfect free trade. So would that of Cuba, Mexico, Ireland, or even England,* and free trade thus established would be beneficial to all, the annexers and the annexed.

The people of the north would not object to the annexation of Canada, although such a measure could profit them but little. They and the Canadians are both sellers of food, and it is the superior value of wheat and flour on the south side of the line by which they are divided that induces the Canadians to desire to be brought within the Union. The people of the South would oppose the admission of Canada, although the effect of such a measure would be to convert the Canadians into large customers, instead of permitting them to remain small ones.† Once within the Union, the consumption of cotton in the British provinces would speedily rise from 20,000,000 of yards, weighing 5,000,000 of pounds, to 30,000,000 of pounds, and thus would the planter gain a market for 50,000 bales of cotton. The material interests of the South would be promoted by the annexation of Canada, yet would the South oppose the measure on the ground of supposed danger to political interests.

The South would advocate the admission of Cuba into the Union, although the effect of such a measure would, under existing circumstances, be that of ruining the cultivation of sugar, the only resource to which the planter now can look with hope—the only one that has enabled him to bear up under the late and present hopeless condition of the cotton culture. The man of the north would oppose the measure, although it would give him sugar at a cost far below the present one, and a market for grain and cloth that would absorb of both to a vast amount. Political interests are thus at variance with material ones. In both cases the discord is but apparent, while the harmony is real. The establishment of that real freedom of trade which results from the immigration of individuals, or from the annexation of communities, can never fail to be productive of benefit to all.

The cotton planter, as we have seen, now sells his product in the cheap-

* Ireland and England are mentioned here only to show that the difficulty of having perfect free trade with them would be removed by the change in the value of labour that would result from change of their political system.

† Export to British North America in the first six months of

	1846.	1847.	1848.	1849.
Plain calicoes .	7,483,318	7,339,686	6,745,536	5,979,991
Printed " . .	8,483,163	6,497,845	4,589,811	5,701,857
	16,966,481	13,837,531	11,335,347	11,681,848

est market and buys his cloth and iron in the dearest one. He gives away the one, and is then unable to buy the other. By changing his system, and compelling the loom to come to the cotton, and the anvil to come to the food, he will sell his cotton and obtain his cloth and iron in exchange for labour that is now being wasted. He will then export cloth to all the world, and the necessity for resorting to the cultivation of sugar will cease. The people of the North will then consume all the sugar that Cuba can produce, and those of Cuba will require pounds of cotton where now they consume but ounces.*

CHAPTER THIRTEENTH.

HOW PROTECTION AFFECTS THE MANUFACTURER.

THE shipowner stands between the producer of cotton and his customers, and the larger proportion the quantity to be transported bears to the number of ships to do the work, the higher will be freights. We might thence suppose that his interest would be promoted by the pursuance of a course that would compel the cotton to go to the loom, and that he would be injured by the adoption of one requiring the loom to come to the cotton. Directly the reverse, however, as we have seen, is the fact. The more the loom can be made to come to the cotton, the more valuable are the services of men, the greater the number of men to be imported, the larger the number of commodities that can be exported, and the larger the business for ships.

The manufacturer, in like manner, stands between the producer and the consumer of cotton, and the larger the quantity of cotton to be converted compared with the machinery of conversion, the larger will be his charge for the use of his machinery. It might, therefore, be supposed that he would be injured by the adoption of measures tending to place the loom in the cotton-fields of the South, or on the coal-fields of the West, but the reverse is the fact. The more people make coarse cloth in the South and West, the more will there be to require fine cloth and silks from the East, and the greater the demand for labour in the one, the greater will be the requisitions made upon the other for the skill they have already acquired, with a constant increase of wages, and equally constant increase in the power of consuming food, cloth, and iron. The more they can make their exchanges at home, with men whose labour is valuable, the larger will be the equivalent received for their own labour; and the more rapid the increase in the value of that of others, the greater will be the value of their own. Every measure tending to break down the monopoly of machinery tends to increase the value of man throughout the world, and none could have that effect to such an extent as would the transfer of the machinery of Lowell to the cotton-fields, to be replaced by other machinery of a higher order.

But, it will be said, "The people of the South need no further protection than they now have. They are satisfied with 30 per cent., and why, if they can go on to manufacture without any increase of duty, should they impose higher duties on fine cloths and silks, for the benefit of the North and East? We know that the latter cannot make fine muslins at the present rate of duty—nor can they manufacture silk goods in competition with France. The South will work up its cotton and make its own exchanges, leaving the duty as it stands, and then Lowell, Lawrence, and Providence must go down, for competition is impossible." Such are the views perpetually promulgated by journals whose editors profess great acquaintance with political

* The export from Great Britain to all the foreign West India Islands is but little over 20,000,000 of yards.

economy, and whose speculations are received as authority by their readers. Nothing, however, could be less in accordance with the true interests of the planters.

The larger the quantity of the machinery prepared for the conversion of cotton into cloth, the smaller will be the charge for its use. The planter requires to rid himself of a *monopoly* that limits the increase of that machinery, and compels him to give to the owners of the little that exists, whether English or American, a share of the product entirely disproportioned to its value as compared with that of the machinery required for producing his cotton. To break down one monopoly and establish another would not answer his purpose, and yet such would be the result at which he would arrive were he to pursue a course that would merely substitute Augusta for Lowell, or Graniteville for Lawrence. The man of the South would, and necessarily, do as he of the North now does, buy his cotton at the market price, *as fixed in England*, and sell his goods at the market price, *as fixed in England*, for until the quantity of machinery shall be so far increased as to prevent the accumulation of large stocks in England, the price must continue to be there fixed for the world; and so long as we shall continue to be *compelled* to go there for any portion of our supplies of cloth, the price of the whole will continue to be fixed by the cost of obtaining the last small portion. What the planter needs is that the price shall be fixed here, for both cotton and cloth, and that it may be so, he requires an *increase* of the quantity of machinery ready to do his work, and not the mere substitution of that of Southern men for that of Northern men.

How indispensably necessary it is that they should do so will be obvious from an examination of the diagram given at page 75. It is there shown how enormous are the charges of the manufacturers when the quantity for cotton requiring to be converted bears a large proportion to the machinery for converting it. In the following table are given,

First. The amount of the crop.

Second. The prices of cotton in Liverpool, by which those of the rest of the world are settled. The dates taken are March, 1844, July, 1845, May, 1846, and June, 1847.

Third. The price of best mule twist, No. 2 per pound, at the same periods of time.

Fourth. The price the whole crop, allowing twelve per cent. for waste, would yield, if converted into this description of yarn.

Fifth. The yield to the planter, supposing the whole crop so sold, from which are to be deducted all the freights, charges, &c., between his plantation and Liverpool.

Sixth. The amount retained by the manufacturer as his charge for converting cotton-wool into yarn.

Year.	Crop.	Price.	Price of twist.	Amount of twist.	Price of crop.	Charge for conversion.
1843-4	815,000,000	6d.	10½d.	£31,000,000	£20,000,000	£11,000,000
1844-5	958,000,000	4	11½	41,000,000	16,000,000	25,000,000
1845-6	840,000,000	4½	9½	30,000,000	16,500,000	13,500,000
1846-7	711,000,000	7	10½	27,500,000	20,700,000	6,800,000

If we deduct from the crop of 1846-7, the comparatively small sum required for the payment of freight, charges, &c., and from that of 1844-5, the large sum required for the same purposes, it will be seen how insignificant is the return to the planter for a large crop compared with what he receives for a small one.

In 1847, the manufacturer gave 7d. and sold at an advance of about fifty per cent.—i. e. he charged half as much for converting the wool into yarn

as he paid for the wool itself. In 1845, when he paid 4*d.* he sold at nearly a shilling—*i. e.*, he charged twice as much for the work of twisting the wool as he paid for the wool. He was enabled to do this, because of two reasons:—First, the machinery of conversion was disproportioned to the quantity of cotton to be converted; and second, the market for cotton goods was extending itself, because the world was comparatively peaceful, and labour was being applied more productively than usual. The effect of the change that has since occurred will be seen from the following view of the operations of 1848.

Crop.	Price.	Price of yarn.	Amount of yarn.	Amount of crop.	Charge for conversion.
1847-8 940,000,000	4 <i>d.</i>	8 <i>d.</i>	£28,000,000	£15,600,000	£12,400,000

The machinery had been increased, but the market was gone. Wars, revolutions, and threats of war and revolution, had destroyed it. The planter had 4*d.* per pound, of which a large portion was swallowed up in the cost of transportation; and the manufacturer obtained as much for twisting the wool into yarn as the planter received for raising, ginning and baling it, and for transporting it, first to the place of shipment, and thence to Liverpool, together with all the charges of the numerous persons through whose hands it passed on its way.

The planter needs machinery adequate to the conversion of his crop, and also a market for it when converted. The failure of either is equally fatal to him.

The first he cannot have under the monopoly system. It is one of mere gambling; and while a few make fortunes, the many are ruined. The distant few, already wealthy—the cotton-lords of England—are not the men to whom he must look to provide him with it. It is to himself, and the many like himself, at home. Fuel and iron ore abound in the South, and cotton fields furnish cheap sites for the erection of acres of factory, in which the product of thousands of acres of cotton could be converted by aid of the labour that is now wasted—the coal and the iron ore whose powers remain unused—the water powers that remain unimproved. By their aid, every pound of cotton now produced in the South, not required by Great Britain and others for their own immediate consumption, could be converted into yarn or cloth, and cheaply furnished to the world. The planter would then receive a yard of cloth for a pound and a half of cotton, instead of giving five pounds for one.

The difference between the price of the crop of cotton, in *Liverpool*, and the price of yarn, also in *Liverpool*, in 1844-5, would have exceeded a hundred millions of dollars, being twice the amount* that it would cost to place in the cotton fields of the South spindles for converting into yarn the whole crop that is now sent without the limits of the Union.

He would then have yarn or cloth to sell instead of cotton, and then his crop would speedily rise to five millions of bales, for the labour and manure now wasted on the road would go upon the land. Capital now absorbed by brokers, ship-owners, and distant manufacturers, would be applied to the making of railroads, the improvement of the machinery of cultivation, the diffusion of knowledge, and in a thousand other ways tending to render labour more productive. Where, however, is he to find a market for his products, thus increased?

Commerce is but an exchange of equivalents; and if the supply of iron, silk, coffee, tea, and other commodities required by the planter, do not keep pace with increase in the supply of cotton, he will be constantly giving

* See Plough, Loom, and Anvil, No. XIX., page 421.

more cotton for less iron or silk, and thus others will enjoy the whole advantage resulting from his increased exertion. That the advantage may, as justly it should, be his, it is necessary that the production of the commodities that he desires *to receive* in exchange go on to increase in a manner correspondent with that which he desires *to give*. If it does so, he gives labour for labour. If it does not, he gives more labour for less labour.

The question now arises: Can the production of the world, under the existing system, go on to increase in such a manner as to give to the planter a proper equivalent for his production? The answer is to be found in the fact, that it has already failed to do so, and that he is even now obliged to abandon cotton for wheat and sugar. How, then, can it be expected to do so in future? The average crop must speedily reach 3,000,000 of bales; and, when it shall have done so, his condition will be worse than at present. The production of the world does not increase correspondingly with our own; and until it can be made so to do, we must work at disadvantage, giving much labour for little labour.

With all its immense mass of rich and unimproved land, the United Kingdom produces little. It does not even feed itself. It has a little iron and coal to sell, but a demand for an extra hundred thousand tons of the former would greatly increase the price of the whole without producing any material increase in the demand for cotton; for the rich iron-master would be made richer, while the poor miner would remain as poor as now. Great Britain has scarcely any thing to sell but *services*—not products. To her we cannot look for a market.

Of the people of France, almost half a million of those most capable of working employ themselves in carrying muskets, and a large portion of the labour of the rest is employed in raising food for them and other non-producers, in making clothing for them to wear, and powder for them to burn. They have, therefore, few products to sell, and, like Great Britain, they have little to offer in exchange but services.

The people of Italy and India raise some silk, but the chief part of both are otherwise occupied than in labours of production; and so are they like to be, and they cannot increase their product to keep pace with ours. Germany maintains large armies, and produces little to sell. So it is with Spain and Portugal. Mexico has a little silver and cochineal: but the quantity does not grow, nor is it likely so to do. Look where we may, the power of production is not only small, but incapable of increase under existing circumstances, and unless a change can be effected, we cannot find markets for the products of our constantly increasing population. What is the remedy? It is to bring the people to the place where *alone* their labour can be made productive, and thus establish perfect free trade with them.

Fifty thousand English miners and furnace men distributed among the coal and iron-ore fields of Pennsylvania, Ohio, Indiana, Tennessee and Alabama, would produce 600,000 tons of bar iron, to be exchanged with the farmer for his wheat, and the planter for his cotton, and the latter would then obtain a ton of the one for a bale of the other, instead of giving two or three for one. He could then make roads to go to market, and the labour of his people would become valuable, and they would consume five times the cloth they now consume, and thus would be made a double market for his cotton.

The same number of Italians would raise quadruple the silk we now consume, and they would be large consumers of food and cotton. Were the market for silk once made here, we should in a little time raise as much as all the world beside, and consume almost all we raised.

The planter and the farmer *must* make a market on the land for the

products of the land, by bringing here the people they desire to employ in the production of the commodities they require to consume; or they *must* continue to give a continually increasing quantity of labour for a continually decreasing one. By adopting the first course, they would convert the consumers of one pound into consumers of twenty pounds, and the consumers of twenty pounds into consumers of forty pounds. By adopting the opposite policy—that now called free trade—they will convert consumers of twenty pounds into consumers of one.

Were it now known in Europe that such was the *fixed and unalterable policy of the nation*, the present year would see the transfer of population to the extent of half a million of persons, and of capital, in the form of machinery, to an incalculable extent; and once here, here they would stay, increasing at once, and immensely, the market for both food and cotton. Five years would scarcely elapse before it would reach a million; for with every year the power to obtain food, clothing, and the machinery for profitably applying labour, would increase, offering new inducements for the transfer of both labour and capital. With each year, the desire of our neighbours, north and south, to enter the Union would increase, and but few would elapse before it would embrace all North America, and a population of forty or fifty millions of people, themselves consuming far more than all the cotton we now raise. The Canadian, in the Union, would find his labours trebly profitable, for he would obtain treble the iron and cloth in return for less exertion. The mines of Nova Scotia and New Brunswick would give forth their treasures in return to the labour of men who now can consume but little food or clothing, but would then have power to consume much. The mines of Mexico would be made to yield three dollars, where now they yield but one; and all would obtain silver, gold, iron, lead, cloth, and all other of the necessaries, comforts, and luxuries of life, at diminished cost of labour.

With each step of this progress there would be increased demand for the labour, both physical and mental, of the manufacturers of the North, for the demand for fine cloths and for silk would grow with the growth of the power to produce coarse cloth and iron; the demand for fine books would grow with the increase of school-books and newspapers; and the demand for cotton and woollen machinery would grow with the increase in the power to obtain railroad iron.

Between the manufacturer and the planter there is, therefore, perfect harmony of interest. All are alike interested in the exertion to shake off the load imposed upon them by the present monopoly of machinery; but of all the agriculturist is most interested. Its tendency is to reduce the power of production throughout the world, to diminish the power of consumption, and thus to destroy the customers of both planter and farmer. The tendency of protection is to raise the value of labour throughout the world, by increasing the estimation in which man is held abroad, and thereby to augment production and the power of consumption. With every increase in the tendency to fly from Europe, it would be felt more necessary to endeavour to keep the people at home. By that process, and that alone, will the labourer of the world be raised to a level with our own.

From a Treatise in the "Store of Knowledge."

THE DISEASES OF THE HORSE.

BY WILLIAM YOUATT.

THE principal diseases of the Horse are connected with the circulatory system. From the state of habitual excitement in which the animal is kept, in order to enable him to execute his task, the heart and the blood-vessels will often act too impetuously; the vital fluid will be hurried along too rapidly, either through the frame generally, or some particular part of it, and there will be *congestion*, accumulation of blood in that part, or *inflammation*, either local or general, disturbing the functions of some organ, or of the whole frame.

Congestion.—Take a young Horse on his first entrance into the stables; feed him somewhat highly, and what is the consequence? He has swellings of the legs, or inflammation of the joints, or perhaps of the lungs. Take a horse that has lived somewhat above his work, and gallop him to the top of his speed; his nervous system becomes highly excited; the heart beats with fearful rapidity; the blood is pumped into the lungs faster than they can discharge it; the pulmonary vessels become gorged, fatigued, and utterly powerless—the blood, arrested in its course, becomes viscid, and death speedily ensues. We have but one chance of saving our patient—the instantaneous and copious abstraction of blood; and only one means of preventing the recurrence of this dangerous state, namely, not suffering too great an accumulation of the sanguineous fluid by over-feeding, and by regular and systematic exercise, which will inure the circulatory vessels to prompt and efficient action when they are suddenly called upon to exert themselves. The cause and the remedy are sufficiently plain.

Again, the brain has functions of the most important nature to discharge, and more blood flows through it than through any other portion of the frame of equal bulk. In order to prevent this organ from being oppressed by a too great determination of blood to it, the vessels, although numerous, are small, and pursue a very circuitous and winding course. If a horse highly fed, and full of blood, is suddenly and sharply exercised, the course of the blood is accelerated in every direction, and to the brain among other parts. The vessels that ramify on its surface or penetrate its substance are completely distended and gorged with it. Perhaps they are ruptured, and the effused blood presses upon the brain; it presses upon the origins of the nerves on which sensation and motion depend, and the animal suddenly drops powerless. A prompt and copious abstraction of blood, or, in other words, a diminution of this pressure, can alone save the patient. Here is the nature, the cause, and the treatment of *apoplexy*.

Sometimes this disease assumes a different form. The horse has not been performing more than his ordinary work, or perhaps he may not have been out of the stable. He is found with his head drooping and his vision impaired. He

is staggering about. He falls, and lies half unconscious, or he struggles violently and dangerously. There is the same congestion of blood in the head, the same pressure on the nervous origins, but produced by a different cause. He has been accustomed habitually to overload his stomach, or he was, on the previous day, kept too long from his food, and then he fell ravenously upon it, and ate until his stomach was completely distended and unable to propel forward its accumulated contents. Thus distended, its blood-vessels are compressed, and the circulation through them is impeded or altogether suspended. The blood is still forced on by the heart, and driven in accumulated quantity to other organs, and to the brain among the rest; and there congestion takes place, as just described, and the animal becomes sleepy, unconscious, and, if he is not speedily relieved, he dies. This too is apoplexy; the horseman calls it *stomach staggers*. Its cause is improper feeding. The division of the hours of labor, and the introduction of the *nose-bag*, have much diminished the frequency of its occurrence. The remedies are plain,—bleeding, physicing, and the removal of the contents of the stomach by means of a pump contrived for that purpose.

Congestions of other kinds occasionally present themselves. It is no uncommon thing for the blood to loiter in the complicated vessels of the *liver*, until the covering of that viscus has burst, and an accumulation of coagulated black blood has presented itself. This congestion constitutes the *swelled legs* to which so many horses are subject when they stand too long idle in the stable, and it is the source of many of the accumulations of serous fluid in various parts of the body, and particularly in the chest, the abdomen, and the brain.

Inflammation is opposed to *congestion*, as consisting in an active state of the capillary arterial vessels; the blood rushes through them with far greater rapidity than in health, from the excited state of the nervous system by which they are supplied.

Inflammation is either *local* or *diffused*. It is confined to one organ, or to a particular portion of that organ; or it involves many neighboring ones, or it is spread over the whole frame. In the latter case it assumes the name of *fever*. Fever is general or constitutional inflammation, and is said to be *sympathetic* or *symptomatic* when it can be traced to some local affection or cause, and *idiopathic* when we cannot so trace it. The truth probably is, that every fever has its local cause, but we have not a sufficient knowledge of the animal economy to discover that cause.

Inflammation may be considered with reference to the membranes which it attacks.

The *mucous membranes* line all the cavities that communicate with the external surface of the body. There is frequent inflammation of

the membrane of the mouth. *Blain*, or *Glossanthrax*, is a vesicular enlargement which runs along the side of the tongue. Its cause is unknown. It should be lanced freely and deeply, and some aperient medicine administered.—*Barbs*, or *paps*, are smaller enlargements, found more in the neighborhood of the bridle of the tongue. They should never be touched with any instrument; a little cooling medicine will generally remove them. *Lampas* is inflammation of the palate, or enlargement of the bars of the palate. The roof of the mouth may be slightly lanced, or a little aperient medicine administered: but the sensibility of the mouth should never be destroyed by the application of the heated iron. *Canker* and *wounds in the mouth* from various causes, will be best remedied by diluted tincture of myrrh, or a weak solution of alum.

Foreign bodies in the gullet may generally be removed by means of the probang used in the hoove of cattle; or the œsophagus may be opened, and the obstructing body taken out.

It is on the mucous membranes that *poisons* principally exert their influence. The *yew* is the most frequent vegetable poison. The horse may be saved by timely recourse to equal parts of vinegar and water injected into the stomach, after the poison has been as much as possible removed by means of the stomach-pump. For arsenic or corrosive sublimate there is rarely any antidote.

Spasmodic colic is too frequently produced by exposure to cold, or the drinking of cold water, or the use of too much green meat. The horse should be walked about, strong friction used over the belly, and spirit of turpentine given in doses of two ounces, with an ounce each of laudanum and spirit of nitrous ether, in warm water or ale. If the spasm is not soon relieved the animal should be bled, an aloetic ball administered, and injections of warm water with a solution of aloes thrown up. This spasmodic action of the bowels, when long continued, is liable to produce *introsusception*, or *entanglement*, of them, and the case is then hopeless.

Superpurgation often follows the administration of a too strong or improper dose of physic. The torture which it produces will be evident by the agonized expression of the countenance, and the frequent looking at the flanks. Plenty of thin starch or arrow-root should be given both by the mouth and by injection; and, twelve hours having passed without relief being experienced, chalk, catechu, and opium should be added to the gruel.

Worms in the intestines are not often productive of much mischief, except they exist in very great quantities. Small doses of emetic tartar with a little ginger may be given to the horse half an hour before his first meal, in order to expel the round white worm; and injections of linseed-oil or aloes will usually remove the ascarides, or needle-worms.

The *respiratory passages* are all lined by the mucous membrane. *Catarrh*, or *cold*, inflammation of the upper air passages, should never be long neglected. A few mashes or a little medicine will usually remove it. If it is neglected, and occasionally in defiance of all treatment, it will degenerate into other diseases. The larynx may become the principal seat of inflammation. *Laryngitis* will be shown by extreme difficulty of breathing, accompanied by a strange roaring noise, and an evident en-

largement and great tenderness of the larynx when felt externally. The windpipe must be opened in such case, and the best advice will be necessary. Sometimes the subdivisions of the trachea, before or when it first enters the lungs, will be the part affected, and we have *bronchitis*. This is characterized by a quick and hard breathing, and a peculiar wheezing sound, with the coughing up of mucus. Here, too, decisive measures must be adopted, and a skillful practitioner employed. His assistance is equally necessary in *distemper*, *influenza*, and *epidemic catarrh*, names indicating varieties of the same disease, and the product of atmospheric influence; differing to a certain degree in every season, but in all characterized by intense inflammation of the mucous surfaces, and rapid and utter prostration of strength, and in all demanding the abatement of that inflammation, and yet little expenditure of vital power.

Cough may degenerate into *inflammation of the lungs*; or this fearful malady may be developed without a single premonitory symptom, and prove fatal in twenty-four or even in twelve hours. It is mostly characterized by deathly coldness of the extremities, expansion of the nostril, redness of its lining membrane, singularly anxious countenance, constant gazing at the flank, and an unwillingness to move. A successful treatment of such a case can be founded only on the most prompt and fearless and decisive measures. The lancet should be freely used. Counter-irritants should follow as soon as the violence of the disease is in the slightest degree abated; sedatives must succeed to them, and fortunate will he be who often saves his patient after all the decisive symptoms of *pneumonia* are once developed.

Among the consequences of these severe affections of the lungs are *chronic cough*, not always much diminishing the usefulness of the horse, but strangely aggravated at times by any fresh accession of catarrh, and too often degenerating into *thick wind* which always materially interferes with the speed of the horse, and in a great proportion of cases terminates in broken wind. It is rare indeed that either of these diseases admits of cure. That obstruction in some part of the respiratory canal, which varies in almost every horse, and produces the peculiar sound termed *roaring*, is also rarely removed.

Glanders, the most destructive of all diseases to which the horse is exposed, is the consequence of breathing the atmosphere of foul and vitiated stables. It is the winding up of almost every other disease, and in every stage it is most contagious. Its most prominent symptoms are a small but constant discharge of sticky matter from the nose; an enlargement and induration of the glands beneath and within the lower jaw, on one or both sides, and, before the termination of the disease, chancreous inflammation of the nostril on the same side with the enlarged gland. Its contagiousness should never be forgotten, for if a glandered horse is once introduced into a stable, almost every inhabitant of that stable will, sooner or later, become infected and die.

The urinary and genital organs are also lined by mucous membranes. The horse is subject to *inflammation of the kidneys* from eating musty oats or mowburnt hay, or from exposure to cold and injuries of the loins. Bleeding, physic, and counter irritants over the region of the loins should be had recourse to. *Diabetes*, or *profuse staling*, is difficult to treat. The inflammation

that may exist should first be subdued; and then opium, catechu, and the uva ursi administered. *Inflammation of the bladder* will be best alleviated by mucilaginous drinks of almost any kind. *Inflammation of the neck of the bladder*, evinced by the frequent and painful discharge of small quantities of urine, will yield only to the abstraction of blood and the exhibition of opium. A catheter may be easily passed into the bladder of the mare, and the urine evacuated, but it will require a skillful veterinary surgeon to effect this in the horse. *A stone in the bladder* is readily detected by the practitioner, and may be extracted with comparative ease. The sheath of the penis is often diseased from the presence of corrosive mucous matter. This may easily be removed with warm soap and water.

To the mucous membranes belong the conjunctival tunic of the eye, and the diseases of the eye generally may be here considered. A *scabby itchiness* on the edge of the eyelid may be cured by a diluted nitrated ointment of mercury. *Warts* should be cut off with the scissors, and the roots touched with lunar caustic. *Inflammation of the haw* should be abated by the employment of cooling lotions, but that useful defence of the eye should never, if possible, be removed. Common *ophthalmia* will yield as readily to cooling applications as inflammation of the same organ in any other animal; but there is another species of inflammation, commencing in the same way as the first, and for a while apparently yielding to treatment, but which changes from eye to eye, and returns again and again, until blindness is produced in one or both organs of vision. The most frequent cause is hereditary predisposition. The reader cannot be too often reminded that the qualities of the sire, good or bad, descend, and scarcely changed, to his offspring. How *moon-blindness* was first produced no one knows; but its continuance in our stables is to be traced to this cause principally, or almost alone, and it pursues its course until cataract is produced, for which there is no remedy. *Gutta serena* (palsy of the optic nerve) is sometimes observed, and many have been deceived, for the eye retains its perfect transparency. Here, also, medical treatment is of no avail.

The serous membranes are of great importance. The brain and spinal marrow, with the origins of the nerves, are surrounded by them; so are the heart, the lungs, the intestinal canal, and the organs whose office it is to prepare the generative fluid.

Inflammation of the brain.—Mad staggers fall under this division. It is inflammation of the meninges, or envelopes of the brain, produced by over-exertion, or by any of the causes of general fever, and it is characterized by the wildest delirium. Nothing but the most profuse blood letting, active purgation, and blistering the head, will afford the slightest hope of success. *Tetanus* or *locked jaw* is a constant spasm of all the voluntary muscles, and particularly those of the neck, the spine, and the head, arising from the injury of some nervous fibril—that injury spreading to the origin of the nerve—the brain becoming affected, and universal and unbroken spasmodic action being the result. Bleeding, physicking, blistering the course of the spine, and the administration of opium in enormous doses, will alone give any chance of cure. *Epilepsy* is not a frequent disease in the Horse, but it seldom admits of cure. It is also very apt to return at the most distant and uncertain

intervals. *Palsy* is the suspension of nervous power. It is usually confined to the hinder limbs, and sometimes to one limb only. Bleeding, physicking, antimonial medicines, and blistering of the spine, are most likely to produce a cure, but they too often utterly fail of success. *Rabies*, or madness, is evidently a disease of the nervous system, and, once being developed, is altogether without remedy. The utter destruction of the bitten part with the lunar caustic, soon after the infliction of the wound, will, however, in a great majority of cases, prevent that development.

Pleurisy, or inflammation of the serous covering of the lungs and the lining of the cavity of the chest, is generally connected with inflammation of the substance of the lungs; but it occasionally exists independent of any state of those organs. The pulse is in this case hard and full, instead of being oppressed; the extremities are not so intensely cold as in pneumonia; the membrane of the nose is little reddened, and the sides are tender. It is of importance to distinguish accurately between the two, because in pleurisy more active purgation may be pursued, and the effect of counter irritants will be greater from their proximity to the seat of disease. Copious bleedings and sedatives here also should be had recourse to. It is in connection with pleurisy that a serous fluid is effused in the chest, the existence and extent of which may be ascertained by the practiced ear, and which in many cases may be safely evacuated.

The heart is surrounded by a serous membrane, the pericardium, that secretes a fluid, the interposition of which prevents any injurious friction or concussion in the constant action of this organ. If this fluid increases to a great degree, it constitutes *dropsy of the heart*, and the action of the heart may be impeded or destroyed. In an early stage it is difficult to detect, and in every stage difficult to cure.

The heart itself is often diseased; it sympathizes with the inflammatory affection of every organ, and, therefore, is itself occasionally inflamed. *Carditis*, or *inflammation of the heart*, is characterized by the strength of its pulsations, the tremor of which can be seen, and the sound can be heard at a distance of several yards. Speedy and copious blood letting will afford the only hope of cure in such a case.

The outer coat of the stomach and intestines is composed of a serous membrane, the peritoneum, which adds strength and firmness to their textures, attaches and supports and confines them in their respective places, and secretes a fluid that prevents all injurious friction between them. This coat is exceedingly subject to inflammation, which is somewhat gradual in its approach. The pulse is quickened, but small; the legs cold; the belly tender; there is constant pain, and every motion increases it; there is also rapid and great prostration of strength. These symptoms will sufficiently characterize *peritoneal inflammation*. Bleeding, aperient injections, and extensive counter irritation will afford the only hope of cure.

The time for *castration* varies according to the breed and destiny of the Horse. On the farmer's colt it may be effected when the animal is not more than four or five months old, and it is comparatively seldom that a fatal case then occurs. For other horses, much depends on their growth, and particularly on the development of their fore quarters. Little improvement

has been effected in the old mode of castrating, except the opening of the scrotum and the division of the cord by the knife, instead of the heated iron.

Synovial or joint membranes are interposed between the divisions of the bones, and frequently between the tendons, in order to secrete a certain fluid that shall facilitate motion and obviate friction. Occasionally the membrane is lacerated, and the synovia escapes. This is termed *opened joint*, and violent inflammation rapidly ensues. The duty of the practitioner is to close this opening as quickly as possible. Nothing is so effectual here as the application of the cautery. A great deal of inflammation and engorgement are produced around the opening, partially, if not altogether, closing it; or at least enabling the coagulated synovia to occupy and obliterate it. Perhaps, in order to secure the desired result, the whole of the joint should be blistered. After this a bandage should be firmly applied, and kept on as long as it is wanted. If there is any secondary eruption of the synovia, the cautery must again be had recourse to.

The Navicular Disease is a bruise, or inflammation, or perhaps destruction, of the cartilage of the navicular bone, where the flexor tendon of the foot passes over it in order to reach the coffin-bone. The veterinary surgeon can alone ascertain the existence and proper treatment of this disease. *Spavin* is an enlargement of the inner side of the hock. The splint-bones support the inferior layer of those of the hock, and as they sustain a very unequal degree of concussion and weight, the cartilaginous substance which unites them to the shank-bone takes on inflammation. It becomes bony instead of cartilaginous, and the disposition to this change being set up in the part, bony matter continues to be deposited, until a very considerable enlargement takes place, known by the name of *spavin*, and there is considerable lameness in the hock-joint. The bony tumor is blistered, and probably fired, but there is no diminution of the lameness until the parts have adapted themselves, after a considerable process of time, to the altered duty required of them, and then the lameness materially diminishes, and the horse becomes, to a very considerable extent, useful. *Curb* is an enlargement of the back of the hock, three or four inches below its point. It is a strain of the ligament which there binds the tendons down in their place. The patient should be subjected to almost absolute rest; a blister should be applied over the back of the tumor, and, occasionally, firing will be requisite to complete the cure. Near the fetlock, and where the tendons are exposed to injury from pressure or friction, little bags or sacks are placed, from which a lubricating mucous fluid constantly escapes. In the violent tasks which the Horse occasionally has to perform, these become bruised and inflamed, and enlarged and hardened, and are termed *windgalls*. They blemish the horse, but are no cause of lameness after the inflammation has subsided, unless they become very much enlarged. The cautery will then be the best cure. Immediately above the hock enlargements of a similar nature are sometimes found, and, as they project both inwardly and outwardly, they are termed *thorough-pins*. They are seldom a cause of lameness, but they indicate great and perhaps injurious exertion of the joint. On the inside of the hock a tumor of this kind, but of a more serious nature, is found. It is one of these enlarged mucous bags, but very

deeply seated and the subcutaneous vein of the hock passing over it. The course of the blood through the vein is thus in some measure arrested, and a portion of the vessel becomes distended. This is a serious evil, since, from the deep-seatedness of the mucous bag, it is almost impossible to act effectually upon it. It is termed *bog* or *blood spavin*.

The cellular tissue which fills the interstices of the various organs, or enters into their texture, is the seat of many diseases. From the badness of the harness, or the brutality of the attendant, the poll of the horse becomes contused. Inflammation is set up, considerable swelling ensues. An ulcerative process soon commences, and chasms and sinuses of the most frightful extent begin to be formed. The withers also are occasionally bruised, and the same process takes place there, and sinuses penetrate deep beneath the shoulder, and the bones of the withers are frequently exposed. These abscesses are termed *poll evil* and *fistulous withers*, and in the treatment of them the Horse is often tortured to a dreadful extent. A better mode of management has, however, been introduced; setons are passed through the most dependent parts; no collection of sanious fluid is permitted to exist, and milder stimulants are applied to the surface of the ulcer.

An abscess of a peculiar character is found between the branches of the lower jaw in young horses. It is preceded by some degree of fever. It is usually slow in its progress, but at length it attains a considerable size, including the whole of the cellular tissue in that neighborhood. There is one uniform mass of tumefaction. This is *strangles*. It seems to be an effort of Nature to get rid of something that oppresses the constitution, and the treatment of it is now simple and effectual. It is encouraged by fomentations and blisters. It is punctured as soon as the fluctuation of a fluid within it can be fairly detected—the pus speedily escapes, and there is an end of the matter.

Farcy.—While the arterial capillaries are engaged in building up the frame, the absorbents are employed in removing that which is not only useless, but would be poisonous and destructive. They take up the matter of glands and of every ulcerating surface, and they are occasionally irritated, inflamed and ulcerated from the acrimonious nature of the poison which they carry. The absorbents are furnished with numerous valves. The fluid is for a while arrested by them, and there the inflammation is greatest, and ulceration takes place. This is the history of the farcy cords and buds. Farcy is a highly contagious disease, whether or not it be connected with glands. It, however, occasionally admits of cure from the application of the cautery to the buds, and the administration the corrosive sublimate or the sulphate of iron internally.

The skin of the Horse is subject to various diseases. Large pimples or lumps suddenly appear on it, and, after remaining a few days, the cuticle peels off, and a circular scaly spot is left. This is called *surfeit*. The cause is obscure, but principally referable to indigestion. A slight bleeding will always be serviceable. Physic rarely does good, but alteratives composed of nitre, black antimony, and sulphur, will be very beneficial. *Mange* is a disease of a different character. It is the curse of the stable into which it enters, for it will almost certainly affect every Horse. Thorough dressings with Barbadoes tar and linseed oil, in the proportion

of one of the former to three of the latter, will be the most effectual external application, while alteratives and physic should be given internally. *Hide-bound* is a very appropriate term for the peculiar sticking of the hide to the ribs when a horse is out of condition. The subcutaneous adipose matter is all absorbed. The alterative above recommended will be very useful here.

The legs, and the hind ones more than the fore ones, are subject to frequent and great and obstinate swellings, attended by great pain and considerable fever. It is acute inflammation of the cellular substance of the legs. Physic and diuretics, and tonics if there is the slightest appearance of debility, are the proper means of cure. Friction and bandages will also be useful occasionally. There is no disease in which the farrier and the groom do greater mischief than in this.

Grease is an undue secretion of the fluid which was designed to lubricate the skin of the heels, and that secretion is also altered in quality. The hind legs begin to swell—a fluid exudes from the heels—the hairs of the heels become erect like so many bristles, and the skin of the heel is hot and greasy. Soon afterward cracks appear across the heel; they discharge a thick and offensive matter, and then deepen. They spread up the leg, and so does the tumefaction of the part. In process of time the skin, inflamed and ulcerated, undergoes an alteration of structure; prominences or granulations appear on it, assuming the appearance of a collection of grapes, or the skin of a pine-apple. They increase, and a fetid discharge appears from the crevices between them.

The cause is generally neglect of the Horse. He is suffered to stand in the stable with his heels cold and wet, which necessarily disposes them to inflammation and disease.

In the first stage of grease, bran or turnip or carrot poultices will be serviceable, with moderate physic. Then astringents must be employed, and the best are alum or sulphate of copper in powder, mixed with several times the quantity of Bole Armenian, and sprinkled on the sores. These should be alternated every three or four days. The grapy heels are a disgrace to the stable in which they are found, and admit not of radical cure.

Splints are bony enlargements, generally on the inside of the leg, arising from undue pressure on the inner splint-bone, and this either caused by the natural conformation of the leg, or violent blows on it. These excrescences will often gradually disappear, or will yield to a simple operation, or to the application of the hydriodate of potash or blister ointments. *Sprains*, if neglected, occasionally become very serious evils. Rest, warm fomentations, poultices, or, in bad cases, blistering are the usual remedies. *Windgalls*, if they are of considerable size, or accompanied by much inflammation or lameness, will find in a blister the most effectual remedy. *Sprains of the fetlock* demand prompt and severe blistering. Nothing short of this will produce a permanent cure. *Sprains of the pastern and coffin-joints* demand still more prompt and decisive treatment. If neglected or inefficiently managed, the neighboring ligaments will be involved, more extensive inflammation will be set up, and bony matter, under the name of *ring-bone*, will spread over the pasterns and cartilages of the foot. Firing alone will, in the majority of cases, be efficient here.

Inflammation of the foot, or acute founder.—In speaking of the structure of the foot, the laminae, or fleshy plates on the front and sides of the coffin-bone, were described. From over-exertion, or undue exposure to cold or wet, or sudden change from cold to heat, inflammation of these laminae is apt to occur, and a dreadfully painful disease it is. It is easily detected by the heat of the feet, and the torture which is produced by the slightest touch of the hammer. The shoe must be removed, the sole well pared out, plentiful bleeding from the toe had recourse to, the foot well poulticed, and cooling medicines resorted to. The bleeding should be repeated if manifest benefit is not procured, and cloths dipped in dissolved nitre, which are colder than the common poultice, should be substituted. After this a poultice around the foot and pastern should succeed. Little food should be given, and that must consist of green meat or mashes.

Pumiced Feet.—This is one of the consequences of inflamed feet. The sole of the foot becomes flattened, or even convex, by the pressure of the weight above. There is no cure here, and the only palliation of the evil is obtained from the application of a shoe so beveled off from the crust that it shall not press upon or touch the sole. This, however, is only a temporary palliation, for the sole will continue to project, and the horse will be useless.

Contracted Feet.—By this is meant an increase in the length of the foot, and a gradual narrowing as the heels are approached; and as the necessary consequence of this, a diminution of the width of the foot and a concavity of the sole. In point of fact, the whole of the foot, including the coffin-bone, becomes narrowed, and consequently elongated. This change of form is accompanied by considerable pain; the action of the Horse is altered; there is a shortened tread, and a hesitating way of putting the foot to the ground.

The frog and heel would expand when the weight of the Horse descends and is thrown upon them, but the nailing of the shoe at the heels prevents it. Thence the pain and lameness. Mr. Turner of Regent-street obviates this by a very simple method. He puts four or five nails in the shoe on the outside, and only two on the inside. There is then sufficient room for the natural expansion to take place, and the foot and action of the Horse are little or not at all changed. This is an admirable contrivance, and recourse should always be had to it.

The Navicular Joint Disease.—There are many Horses with open and well-formed feet that are lame. In every motion of the foot there is a great deal of action between the navicular bone and the flexor tendon which passes over it in order to be inserted into the navicular bone. From concussion or violent motion, the membrane or the cartilage which covers the navicular bone is bruised or abraded, the horse becomes lame, and often continues so for life. This disease admits of remedy to a very considerable extent; no one, however, but a skillful veterinary surgeon is capable of successfully undertaking it.

Sand-crack is a division of the crust of the hoof from the upper part of it downward. It bespeaks brittleness of the foot, and often arises from a single false step. If the crack has not penetrated through the horn, it must nevertheless be pared fairly out, and generally a coating of pitch should be bound round the foot. If the

crack has reached the quick, that *must* be done which ought to be done in every case—a skillful surgeon should be consulted, otherwise false quarter may ensue.

False Quarter is a division of the ligament by which the crust is secreted. It is one of the varieties of sand-crack, and exceedingly difficult to cure.

Trad or Overreach is a clumsy habit of setting one foot upon or bruising the other. It should immediately and carefully be attended to, or a bad case of *quittor* may ensue.

Quittor is the formation of little pipes between the crust and the hoof, by means of which the purulent matter secreted from some wound beneath the crust makes its escape. The healing of this, and of every species of *prick* or *wound* in the sole or crust, is often exceedingly difficult.

Corns are said to exist when the posterior part of the foot between the external crust and the bars is unnaturally contracted and becomes inflamed. Corns are the consequence of continued and unnatural pressure. The thorough cure of corns will put the ingenuity of the operator to the trial.

Thrush is the consequence of unnatural pressure on the frog. It is the cause and the effect of contraction, whether it is found in the heels of the fore feet or the hinder ones. It is not difficult to cure when taken in time, but when neglected it often becomes a very serious matter.

Canker is the consequence of thrush, or, indeed, of almost every disease of the foot. It is attended by a greater or less separation of horn, which sometimes leaves the whole of the sole bare. This, also, like the diseases of the foot generally, is difficult of cure.

Few things are more neglected, and yet of greater importance to the comfort and durability of the Horse, than a proper system of *shoeing*. It is necessary that the foot should be defended from the wear and tear of the roads, but that very defence too often entails on the animal a degree of injury and suffering scarcely credible. The shoe is fixed to the foot, and often interferes with and limits the beautiful expansibility of that organ, and thus causes much unnecessary concussion and mischief.

The shoe of a healthy foot should offer a perfectly flat surface to the ground. The bearing weight of the Horse will then be diffused over the surface of the shoe, and there will be no injurious accumulation of it on different points. Too often, however, there is a convexity toward the inner edge, which causes an inequality of bearing, and breaks and destroys the crust. Round the outer edge of the shoe, and extended over two-thirds of it on the lower surface, a groove is sunk, through which pass the nails for the fastening of the shoe. At first they somewhat project, but they are soon worn down to the level of the shoe, which in the healthy foot should not vary from the heel to the toe.

The width of the shoe will depend on that of the foot. The general rule is that it should protect the sole from injury, and be as wide at the heel as the frog will permit.

The upper surface of the shoe should be differently formed. It should be flat along the upper end, outer supporting the crust, or, in other words, the weight of the horse, and widest at the heel, so as to meet and withstand the shock of the bars and the crust. The inner portion of the shoe should be beveled off, in order that, in

the descent of the sole, that part of the foot may not be bruised. The owner of the Horse should occasionally be present when the shoes are removed, and he will be too often surprised to see how far the smith, almost wilfully, deviates from the right construction of this apparently simple apparatus. The beveled shoe is a little more troublesome to make and to apply than that which is often used by the village smith, but it will be the owner's fault if his directions are not implicitly obeyed.

Even at the commencement of the operation of shoeing, the eye of the master or the trustworthy groom will be requisite. The shoe is often torn from the foot in a most violent and cruel way. Scarcely half the clenches are raised when the smith seizes the shoe with his pincers and forcibly wrenches it off. The shrinking of the Horse will tell how much he suffers, and the fragments of the crust will also afford sufficient proofs of the mischief that has been done, especially when it is recollected that every nail-hole is enlarged by this brutal force, and the future safety of the shoe to a greater or less degree weakened, and pieces of the nail are sometimes left in the substance of the crust, which become the cause of future disease.

In the paring out of the foot, also, there is frequently great mischief done. The formidable *butteris* is still often found in the smithy of the country farrier, although it is banished from the practice of every respectable operator. A worse evil, however, remains. By the *butteris* much of the sole was injuriously removed, and the foot was occasionally weakened, but the *drawing-knife* frequently left a portion of sole sufficient to destroy the elasticity of the foot, and to lay the foundation for contraction, corns and permanent lameness. One object, then, of the looker-on is to ascertain the actual state of the foot. On the descent of the crust, when the foot is placed on the ground, depends the elasticity and healthy state of the foot, and that may be satisfactorily determined by the yielding of the sole, although to a very slight degree, when it is strongly pressed upon with the thumb. The sole being pared out, the crust on each side may be lowered, but never reduced to a level with the sole, otherwise this portion will be exposed to continual injury.

The heels often suffer considerably from the carelessness or ignorance of the smith. The weight of the Horse is not thrown equally on them, but considerably more on the inner than the outer quarter. The consequence of this is that the inner heel is worn down more than the outer, and the foundation is laid for tenderness and ulceration. The smith is too often inattentive to this, and pares away an equal quantity of horn from the inner and outer heel, leaving the former weaker and lower, and less able to support the weight thrown upon it.

Mention has already been made of the use of the *bars* in admitting and yet limiting to its proper extent the expansion of the foot. The smith in the majority of country forges, and in too many of those that disgrace the metropolis, seems to have waged interminable war with these portions of the foot, and avails himself of every opportunity to pare them down, or perfectly destroy them, forgetting, or never having learned, that the destruction of the bars necessarily leads to contraction by removing the chief impediment to it.

The horn between the crust and the bar should be well pared out. Every one accustomed to

Horses must have observed the great relief that is given to the Horse with corns when this angle is pared out, and yet from some fatality, the smith rarely leaves it where Nature placed it, but cuts away every portion of it.

The true function of the frog is easily understood. It gives security to the tread, and contributes expansion to the hoels; but the smith, although these cases come before him every day, seems to be quite unaware of the course which he should pursue, and either leaves the frog almost untouched, and then it becomes bruised and injured, or he pares it away so that it cannot come into contact with the ground, and consequently is not enabled to do its duty.

The owner of the Horse will therefore find it his interest occasionally to visit the forge, and guided by the simple principles which have

been stated, he will seldom err in his opinion of what is going forward there. He should impress two principles deeply on his mind, that a great deal more depends on the paring out of the foot than in the construction of the shoe: that few shoes, except they press upon the sole, or are made shamefully bad, will lame the Horse, but that he may be very easily lamed by an ignorant or improper paring out of the foot.

Where the owner of the Horse has sufficient influence with the smith, he will find it advisable always to have a few sets of shoes ready made. Much time will be saved, in case of accident, and there will not be, as is too often the case, the cutting and paring and injuring of the foot, in order to make it fit the shoe. More injury than would be readily believed is done to the foot by contriving to get on it too small a shoe.

INSECTS MOST INJURIOUS TO VEGETABLES AND ANIMALS, AND THE MEANS BEST CALCULATED TO COUNTERACT THEIR RAVAGES

BY REV. JAMES DUNCAN, M. W. S.

[From the Journal of the Highland Agricultural Society of Scotland.]

LICE.—Almost all our domestic animals are well known to be more or less infested with minute parasites, which have been long referred by naturalists to the genus *Pediculus*. The great majority of our native animals, whether wild or in a domestic state, have their peculiar kinds appropriated to them. Indeed, it was long imagined that each and every animal had its own peculiar parasite, but this is not altogether borne out by facts; for,

"Although, in the majority of cases, a distinct species of insect is found upon each particular animal, i. e. quadruped or bird, yet there are several instances where the same kind infests three or four different species of birds, but, in such exceptions, they are almost always confined to individuals of the same genera or family, or at least to species of similar habits. This is more strictly the case with birds than quadrupeds. For instance, *Docophorus icteroides* I have found on nearly every species of duck which has come under my notice. I have received it from other birds also; but they were of aquatic habits, and belonging to the order Natatores. The *Nirmus obscurus* infests several species of sandpipers, godwits, &c., the *Nirmus rufus* upon several of the hawks and falcons; and *Docophorus lari* upon nearly all the gulls. In the instances among quadrupeds it is rather doubtful whether the species is common to two different animals or not, or whether they may not have been merely transferred by associating or frequenting the same place of abode; as—for example, the *Trichodectes scalaris* found both upon the ox and ass—where the animals are feeding in the same stall, or sleep together, a transfer of property might easily be made. The *Hæmatopinus piliferus* infests dogs, and I have received specimens from the ferret, which last animal was said to swarm with them. Here it is rather difficult to account for the occurrence, as I am not aware that the two animals ever live on friendly terms with each other; and, moreover, the person from whom I received them informed me that he had not a dog. When we extend our observations to genera, we find they take a much wider range, and it is in only two or three cases that we could with any confidence assert that they were diagnostic of certain families of Vertebrata. It is easy to say whether they are belonging to quadruped or bird, but more difficult to pronounce the peculiar family of either, as some genera of each division appear perfect cosmopolites, as, for instance,

the genus *Pediculus* of Linn., (since divided into *Pediculus* and *Hæmatopinus*.) besides infesting man, is also found in the orders *Quadrumana*, on monkeys; *Rodentia*, on the squirrel, hare, rabbit, water-rat; *Carnivora*, on the dog and seal; *Pachydermata*, on the swine, ass and camel; *Ruminantia*, on the deer, ox, and buffalo. The genus *Nirmus*, again, is very extensively spread, infesting every order of birds but the *Gallinacea*. *Docophorus*, all but *Gallinacea* and *Columbida*; *Lipeurus* infesting the orders *Gallinacea*, *Gralla*, *Palmpedes*, and *Accipitres*; while, on the other hand, a few, as I have stated, are nearly certain indexes to the families. *Eurcum* only on *Chelidones*; *Trinoton* only on *Palmpedes*; *Goniocotes* and *Goniodes* only on *Gallinacea* and *Columbida*; *Gyropus* only on the Guinea-pig in this country. Dr. Burmeister enumerates a species also from the *Ai*, (*Bradyus tridactylus*), and, lastly, the genus *Phthirus* on man."

Not only are there numerous instances of one kind of pedicular parasite being confined to one kind of animal, but in not a few cases there is a particular species assigned to different parts of the same animal, and these are seldom found to encroach on their respective provinces. This fact, in a physiological point of view, is exceedingly curious, and difficult to be accounted for. In Mr. Denny's beautiful work, a quotation from which has just been given, all the species hitherto found in this country are described and figured in a style of art which has been seldom surpassed as applied to entomological subjects. He enumerates nearly 250 different species as occurring on British animals. The great majority of these are found in too small numbers to produce any injury of importance; but others, again, as is well known to every one that rears and fattens cattle, multiply excessively at times, and are productive of great uneasiness and annoyance to the animals, while they greatly impair their look by denuding the skin of the hair, and giving it a very unsightly appearance.

Naturalists differ in opinion as to whether these insects undergo a true metamorphosis, like others of their class. The truth appears to be,

* "Denny's Monographia Anoplurorum Britanniae," p. ix.

that the metamorphosis is very imperfect, and seems to consist in a series of consecutive changes of skin, and gradual increase in size, such as might be expected in an animal in its progress to maturity, rather than to form a metamorphosis, properly so called. In all stages they are active, and possess the power of taking food.

It is of importance, in a practical point of view, to be acquainted with the marks by which these troublesome and disagreeable parasites are distinguished, because different methods of destroying them require to be adopted according to their different habits and places of residence. The whole tribe is divided into two sections; the one containing such species as are provided with a tubular sucker, the other, the kinds having the mouth provided with two horny mandibles or jaws. These differences in the structure of the mouth must obviously exercise a great influence on their habits and general modes of procedure.

The first we shall notice, which is one of the most common and troublesome, belongs to the last-mentioned division; it is the *Trichodectes scalaris*. The genus *Trichodectes* is known by having the antennæ three-jointed; the tarsi with one claw; the head horizontal and scale-like, with the mouth beneath; mandibles strong, tridentate at the apex; the eyes very inconspicuous, and at all times invisible. All the species live upon quadrupeds, their food consisting of hair, wool, and exfoliated particles of the epidermis. Their jaws act horizontally, and cut off the hair close by the roots, exactly as if it had been done with a pair of scissors.

T. scalaris, *Pediculus bovis*, Linn. LOUSE OF THE OX, is about half a line in length, the head and thorax of a bright rust-yellow, the former with two dusky spots in front, and of an abcordate shape; eyes prominent; antennæ pale yellow, the third joint longest and spindle-shaped; abdomen oblong, pale, tawny, finely pubescent, the first six segments with a transverse rust-red or dusky band on the upper half, and a large longitudinal spot of the same color on each side; the hinder extremity with a large similarly colored spot; legs pale; the claws nearly straight. (Fig. 1.)

This species is very common on cattle, and for the most part is found about the roots of the hair on the mane.

T. equi, *Pediculus equi*, Linn. LOUSE OF THE HORSE.—Nearly one-half larger than the preceding, but in other respects bearing a close resemblance to it. The head and thorax are of a bright chestnut color; the head somewhat square, with the angles rounded, and much wider than the thorax, having an angular dusky line on each side posteriorly; antennæ pale, thick, the last joint longest, and somewhat club shaped; abdomen obcon-

ical, colored nearly as in *T. scalaris*; legs pale, thick and strong, the tibiæ abruptly clavate; the tarsi short. (Fig. 2.)

Common on the horse and ass, multiplying to a great extent when these animals are afflicted with certain kinds of diseases. It is said to be most plentiful when the animals are fresh from pasture. Several other species belonging to this genus are found on different animals. One occurs on the sheep, (*T. sphærocephalus*), another (*T. longicornis*) on the fallow-deer, and a third (*T. similis*) on the red-deer; but they never appear to increase on these animals to an injurious extent.

Hæmatopinus eurytæstus. LOUSE OF THE OX.—In this genus the mouth is formed for sucking, there being a short tube projecting from the mouth;

the antennæ are five-jointed; the thorax distinctly separated from the abdomen, and much narrower, shorter and broader than the head; abdomen large, depressed, commonly oval, consisting of eight or nine segments; legs formed for climbing, very thick and strong; claws single and incurved. Perhaps the most plentiful of all the species which infest cattle is that named above. The head, which is of a chestnut color, is somewhat triangular, rounded behind; the thorax dull chestnut, nearly square, with a spiracle and an impressed line on each side; abdomen greyish-white, or ochrey, smooth and shining, with four longitudinal rows of dusky, horny excrescences, the last segment with two black, curved marks; legs chestnut, the extremity of the claws black. Length from 1 to 1½ lines. (Fig. 3.)

It is this species, for the most part, that proves so troublesome to stalled oxen. It frequents chiefly the mane and shoulders. Being a suctional insect, it cannot directly strip off the hair, but, by abstracting the juices by which the bulb or root of the hair is nourished, it makes it more liable to fall off, and the irritation its punctures occasion causes the animals to rub themselves till the skin is quite bare. Mr. Denny remarks that the young are much more agile than the mature insect, and differ in nothing except a want of proportion, the limbs being much thicker as compared with the bulk of the body than when adult. Another species, somewhat similar in appearance, (*H. vituli*), occurs in the calf, but it does not appear to be common.

Hæmatopinus suis.

Pediculus suis, Linn. LOUSE OF SWINE.—Head and thorax dusky rust-color, the former somewhat pear-shaped, with an angular black line at the apex, and one on each side before the eyes; hinder angles of the thorax acute, each side with a distinct spiracle; abdomen large, flat and oval; of a membranaceous consistency, bluish or yellowish ash color, sometimes nearly white; the second and five following segments with a black,

Fig. 3.

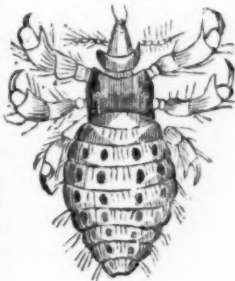


Fig. 1.

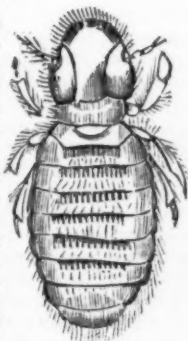


Fig. 2.

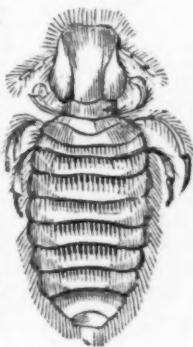
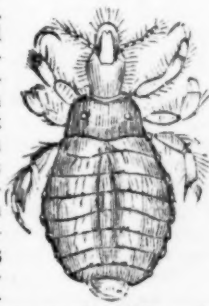


Fig. 4.



horny excrescence on each side surrounding the spiracles; the hinder segment with a black patch on each side; legs pale, long and thick. Length $1\frac{1}{4}$ to $1\frac{3}{4}$ lines. (Fig. 4.)

This species is found, for the most part, in great plenty on all kinds of swine, although certain breeds appear to be infested with more than others. Mr. Denny states that it does not appear to be so generally spread as might be expected from the dirty habits of the animals.

"It most frequently occurs (he says) on those fresh imported from the Sister Isle. It was many months before I could obtain a single example. I had applied to both farmers and pig butchers, neither of whom seemed to approve of the idea which I had conceived of their pigs being lousy, but referred me to those of the Emerald Isle as being sure to gratify my wishes—(forgetting, I suspect, that the Irish pigs come to this market to meet English buyers.) I accordingly visited a colony just arrived, when I certainly met with a ready supply; but here they were confined almost entirely to lean animals, and wherever I found a pig fat or healthy, no game were to be seen. In walking, this species uses the claw and tibial tooth with great facility (which act as finger and thumb) in taking hold of a single hair. The male is much smaller, with the abdomen shorter, suborbicular, and the segments lobate; the egg or nit is $\frac{3}{4}$ of a line in length, of a cream-color, and elegantly shagreened, oblong, and slightly acuminate, surrounded by a lid, which, when the young insect is ready to emerge, splits circularly, or, as a botanist would say, has a circumscissile dehiscence."

H. asini, *Pediculus asini*, Linn. LOUSE OF THE ASS.—About the size of the preceding species; color rust-yellow on the head and thorax, the former very long, narrow anteriorly, with two black patches on each side near the apex; abdomen large and ovate, pale-yellowish white, wrinkled and hairy, with a dusky, horny excrescence surrounding each spiracle; the last segment with a large angular black spot on each side; legs short and thick, the color of the thorax. Length 1 to $1\frac{1}{2}$ lines.

This parasite is very plentiful on the ass, particularly about the head and mane, but, probably, owing to the thick skin of the animal, it does not appear to occasion it much annoyance. The rabbit is also infested with a peculiar species of *Hematopinus*, and likewise the dog, but they seldom increase to any great extent.

These are the principal pedicular parasites which are most annoying to our most useful quadrupeds. Birds of almost every kind, whether wild or tame, have also their peculiar inhabitants of this class; not a few of them are infested by several different kinds. This is the case more especially with the common domestic fowl, which has at least five species appropriated to it. Of these, one of the most common, which may be seen running over the hands of those employed in plucking fowls, and which is difficult to brush off, owing to the flatness and smoothness of its body, is the

Menopon pallidum, *Pediculus gallinae*, Linn. It is very minute, not exceeding $\frac{1}{2}$ or $\frac{3}{4}$ of a line in length; the color pale straw, the surface shining and smooth; head triangular and obtuse, with pitchy spots on each side; antennae with the fourth joint large and oblong, and terminating in a tuft of hairs; eyes dark; abdomen elongate oval, the segments equal; legs rather thick, the anterior thighs broad and round. The other species which infest poultry are the *Goniodes dissimilis*, a genus remarkable for having, in the males, the third joint of the antennae recurved toward the first, and forming a claw, by which the insect can lay hold of a hair, the barb

of a feather, or any other small object; *Goniocotes holoaster*, having the head, thorax and legs pale yellow, with pitchy black marginal bands and spots, and the abdomen with pale ash-colored lateral bands bordered with black. Neither of these two species is common. But the *Lipeurus variabilis*, which may be known by being of a dull white color margined with black, is very abundant on the domestic fowl, preferring the primary and secondary feathers of the wings, among the webs of which it moves with great celerity.

Two or three different species inhabit the various kinds of pigeon. Of these the most common is *Goniocotes compar*, which has a large head, with produced acute angles behind, from each of which two long bristles project; abdomen white, broad and obovate, the margin all round rusty brown; length from 1 to $1\frac{1}{2}$ line. Next to this in frequency, and sometimes still more abundant, is *Lipeurus baculus*, the body of which is very narrow and elongated, the head angular and depressed; the abdomen nearly cylindrical, dull yellow-white, with a series of large trapezoidal dusky patches on each side. Few birds, Mr. Denny remarks, are so infested with parasites as the *Columbidae*; besides four species of lice, he has found upon them a large *Ixodes*, a small *Acarus*, and the *Pulex columbae*; and Rev. S. Jenyns detected a bug, *Cimex columbarius*, which he has described in the "Annals of Natural History."*

Grouse, and their near ally, the common partridge, are far from being exempted from these unwelcome visitors; and in unhealthy seasons, when the former are in a debilitated state, the attacks of the parasites tend greatly to retard or prevent their recovery. *Goniodes tetraonis* infests both the black-cock and common grouse, and is, for the most part, very common. The form of the head resembles that of *Goniocotes compar*; color of the head and thorax pale chestnut yellow; abdomen pale yellowish-white, obovate, lateral margin bright chestnut, each segment, except the antepenultimate, with a pitchy sutural, somewhat club-shaped, abbreviated band. Length about a line; the female somewhat larger. *Nirmus cameratus* is also common on the red grouse. It is much smaller than the above, deep chestnut color and pilose; head short, and somewhat heart-shaped; central band and sutures of the abdomen pale yellow white. The species most frequently observed on the common partridge is *Menopon perdricis*, a very minute insect, not exceeding $\frac{3}{4}$ of a line in length, of a dull ochrey yellow, the head large and almost semilunar, with a dusky spot on each side, and a band before each eye; the abdomen broad. A more remarkable looking species, also frequenting this bird, is named *Goniodes dispar*, but it is not of frequent occurrence. One of the largest known parasites of this class occurs on the peacock. It is *Goniodes falcicornis*, *Pediculus pavonis*, Linn. The female is about 2 lines in length; and the male has the first joint of the antennae with a large tooth on the internal edge; second cylindrical; the apex oblique; third long and recurved; fourth and fifth very small, in the female filiform. This insect may be found after the death of the bird collected in numbers about the base of the beak and crown of the head. *Goniodes stylifer*, which has a considerable general resemblance to the above, is found on the turkey; it is easily recognized

* Vol. V. p. 242.

by having the hinder angles of the head produced into a sharp projection like a horn.

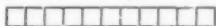
Many other of our domestic birds, such as geese, ducks, &c., have each a peculiar parasite of this class assigned to them, and there are scarcely any of our wild birds that are without similar assailants. But in such cases, the parasites appear to do little or no injury, and it is unnecessary, therefore, to refer to them more particularly.

In regard to the means best adapted for counteracting the ravages of these parasites, lice on cattle and horses may be destroyed by a plentiful and repeated application of oil, and also by repeated rubbing of mercurial ointment into the affected parts of the skin: but, on using this latter substance, care should be taken not to expose the animal to rain or cold.

LINSEED COMPOUND, AS FOOD FOR STOCK.

We are not aware of the extent to which American feeders of cattle have proceeded in the use of flax-seed, in lieu of oat-cake and other substances, as food for stock; but believing that under certain circumstances it may be expedient so to employ it, we deem it our duty to throw all the light we can on a subject upon which there is no redundancy of information. Hence we give the following, from one made familiar with it by much experience.

Linseed Compound.—1st, Let a quantity of linseed be reduced to fine meal. 2d, Put about 16 gallons of water into a copper, and let it boil. 3d, Stir into the water quickly 2 lbs. of the linseed meal, and let it boil for about five minutes. 4th, Let 60 lbs. of barley or bean meal be sprinkled upon the boiling mucilage by the hand of one person, while another, as rapidly as possible, stirs and works it in. The whole will now have assumed the form of a thick mess or pudding. When cold the compound should be perfectly stiff. Many farmers put it into moulds, like those used for bricks, while hot. They are thus made, and



placed upon a flat piece of board, somewhat larger and wider. The compound is put in with a trowel, and pressed down firmly; the moulds are then lifted up, and the cakes left to cool. In this way the food will keep longer; but I generally put it into a tub, and ram or press it down with an instrument made of wood,* in order to exclude the air. The compound is generally given in small quantities at first, and increased at pleasure—for the first week, 5 lbs. or 7 lbs. per day, when, according to the size of the animal and quality of other food given, the quantity may be increased to 14 lbs., 21 lbs., or 28 lbs. per day. Observe, the inside of the mould should be a little wider at the bottom, in order to prevent the compound from sticking to the sides. With respect to making beans into compound, no difference is to be observed, except that they will require 2 or 3 gallons, or even more, of water than barley, as you will perceive in the course of your experience. But observe, the beans must be reduced to a fine meal, equal, if possible,

* These rammers are square or club-ended, with a knob like a pestle at top, or a cross-stick through, to give better hold.

to flour. Linseed can be incorporated with chopped hay or straw with great effect. I use it largely, and find it much cheaper than corn. The proportions, according to the size of my copper, are nine pails of water and a pail and a half of linseed meal, and about nine bushels of cut hay, chaff, or straw. The plan of mixing is first to form the mucilage as you would for other compounds; next place a large tub with a strong bottom, or trough, near the copper; then put a bushel of the cut hay into it, and your two or three bowls of the boiling mucilage upon it, which is to be immediately stirred up with hay. Then add a bushel of the hay, with some more of the mucilage, which, after being intimately mixed, is to be pressed down as firmly as possible with the rammer. The first layer is then finished. Proceed as before till the copper is empty; smooth the top of the mess over with the trowel, and in the course of two or three hours it will be fit for use. To make cattle-compound with potatoes or white carrots, nothing more is required than, after having been properly steamed or boiled, to remove them from the vessels as hot as possible into a trough, then sprinkle some linseed meal upon them, and knead the whole into a mass with the rammer. The compound may be put hot into the moulds, and made into cakes, or used from the trough. Less labour will be required if the roots are removed from the cooking vessels in small quantities, and incorporated with the meal. The effect of giving only 1 lb. of linseed meal per day to a bullock, when incorporated with potatoes or carrots, will soon become visible; but if a pound or two more were added, the animal would fatten at a rate which those alone who watched the proceedings could believe. The price of linseed for crushing purposes appears to be about five farthings per pound. Remember that when the hay compound becomes cold, it turns sour, and the bullocks then reject it. Mine eat it smoking.

Method of putting Two Swarms into one Hive.

—PEOPLE are apt to consider their own plans best, therefore I may be excused, perhaps, for thinking that a plan I have for putting two swarms of bees together, or putting a swarm into an old weak hive, is better than any I have seen mentioned. On the swarm leaving the hive, I shake it into an octagonal wood box, which has at the top a hole 3 inches in diameter, which hole is closed by a slide the same day; in the evening, after all the bees have got in, I place the hive into which I wish the swarm to enter upon the top of the box, which I have previously smeared with honey, and then draw the slide; this usually causes a number of the bees which have been hanging to the slide to fall down on to the floor of the box, and creeping up again to join their companions, they find a hole through which they pass, and the rest follow them to feed upon the honey they find there, and then creep forward, still upward, so that next morning I generally find a united family without the stinging, or fighting or killing of bees, consequent on the plans mentioned by other parties, as the amalgamation in most instances takes place without any of the bees being killed, or quarrelling with each other.—T. G. Clitheroe.

GOVERNOR HAMMOND'S ADDRESS BEFORE THE SOUTH CAROLINA INSTITUTE.—EXTRACTS AND COMMENTS.

WANT of room has until now prevented us from calling the attention of our readers to the excellent address of Governor Hammond, delivered before the South Carolina Institute, in November last. We have read it with infinite pleasure, and would gladly give the whole of it, but must content ourselves with some extracts, from which our readers will see that he teaches the essential doctrine that the plough cannot flourish at a distance from the loom and the anvil, and that for the farmers and planters to flourish, *they must make a market on the land for the products of the land*. That he and we do not as yet agree as to the measures necessary for bringing about that great work, we do not deem important; satisfied as we are, that when our planting friends shall have determined that the British policy, which looks now, as it did before the Revolution, to compelling all nations to make their exchanges in British ports, and to making Britain "the workshop of the world," is adverse to their interests, they will not be long in discovering that the measures we advocate are those which tend to the speedy and safe establishment of *perfect freedom of trade*, and the only ones that can produce that result.

"What are we to do in South Carolina?" Such is the question that meets us here as in every journal published in that State.

"But a small portion of the land," says Governor Hammond, "we now cultivate will produce two thousand pounds of ginned cotton to the hand. It is thought that our average production cannot exceed twelve hundred pounds, and that a great many planters do not grow over one thousand pounds to the hand. A thousand pounds, at five cents nett, will yield about two per cent., in cash, on the capital invested; and twelve hundred pounds, but three per cent., after paying current plantation expenses. At such rates of income our state must soon become utterly impoverished, and of consequence wholly degraded. Depopulation, to the utmost possible extent, must take place rapidly. Our slaves will go first, and that institution from which we have heretofore reaped the greatest benefits, will be swept away; for history, as well as common sense, assures us, beyond all chance of doubt, that whenever slavery ceases to be profitable, it must cease to exist.

"These are not mere paper calculations, or the gloomy speculations of a brooding fancy. They are illustrated and sustained by facts, current facts of our own day, within the knowledge of every one of us. The process of impoverishment has been visibly and palpably going on, step by step, with the decline in the price of cotton. It is well known, that for the last twenty years, floating capital to the amount of five hundred thousand dollars per annum, on the average, has left this city and gone out of South Carolina, seeking and finding more profitable investments than were to be found here. But our most fatal loss, which exemplifies the decline of our agriculture and the decay of our slave system, has been owing to emigration. The natural increase of all the slaves in the south, since the prohibition of the African Slave Trade, has been thirty per cent. for every ten years. From 1810 to 1820, the increase in South Carolina was a fraction above that rate. From 1820 to 1830, it was a fraction below it. But from 1830 to 1840, the increase was less than seven per. cent. in ten years; and the census revealed the painful and ominous fact that the number of slaves in South Carolina was eighty-three thousand less than it should have been. No war, pestilence, or famine had visited our land. No change of climate, or of management, had checked the natural increase of this class of our population. There can be no reasonable doubt that the ratio of its increase had been as fully maintained here as elsewhere. But the fact is that, notwithstanding the comparatively high average price of cotton from 1830 to 1840, these slaves had been carried off by their owners, at the rate of eight thousand three hundred per annum, from a soil producing to the hand twelve hundred pounds of cotton, on the average, to one that yielded eighteen hundred pounds. And there is every reason to apprehend that the census of next year will show that the whole increase of the last decade, which must amount to one hundred thousand, has been swept off by the still swelling tide of emigration."

"Under these circumstances," says our orator, "the question may well be

asked again, "What are we to do in South Carolina?" The answer is thus given :—

"The first remedy for our decaying prosperity, which naturally suggests itself, is the improvement of our agricultural system; and of late years a great deal has been said upon this subject. That it is susceptible of great improvement is very clear, but it is equally and lamentably true that little or nothing has as yet been done. It must be owned that neither our agricultural societies nor our agricultural essays have effected anything worth speaking of. And it does seem, that while the fertile regions of the South West are open to the cotton planters, it is vain to expect them to embark, to any extent, in improvements which are expensive, difficult, or hazardous. Such improvements are never made but by a prosperous people, full of enterprise and abounding in capital, like the English—or a people pent up within narrow limits, like the Dutch. Our cotton region is too broad, and our Southern people too homogeneous for metes and bounds, to enforce the necessity of improving any particular locality; and our agriculture is now too poorly compensated to attract superfluous capital or stimulate to enterprise. It is clear that capital, enterprise, some new element of prosperity and hope must be brought in among us, from some yet untried or unexhausted resource, before any fresh and uncommon energy can be excited into action in our agricultural pursuits. In fact, if prices had not gone down and our lands had not worn out, it may be said with great truth, that we have too long devoted ourselves to one pursuit, to follow it exclusively much longer with due success in all those particulars, which constitute a highly prosperous and highly civilized community.

"It is a common observation that no man of one idea, no matter how great his talent and his perseverance, ever can succeed. For both human affairs and the works of nature are complete, exhibiting everywhere an infinite variety of mutual relations and dependencies, many of which must be comprehended and embraced in searching after truth, which is the essential basis of all real success. So, if guided by the light of history, we look back over the long track of time, we shall find that no nation devoted exclusively to one pursuit has been prosperous or powerful for any extended period. Even the warlike Spartans zealously promoted agriculture. And Rome began to decline from the moment that she ceased to draw her soldiers and her generals from her fields and vineyards. But a people wholly agricultural have ever been, above all others, in all ages, the victims of rapacious tyrants, grinding them down, in ancient times, by force of arms, in modern, by cunning laws. The well-known fact suggests the obvious reason, and the reason illustrates our present condition and apparent prospects. The mere wants of man are few and limited. The labour of one can supply all that the earth can yield for the support of ten. If all labour, there is useless superabundance. If few labour there is corrupting sloth. And if advancing civilization introduces new wants, and the elegancies and luxuries, as well as the necessities of life, are to be obtained, the products of agriculture are the least profitable of all articles to barter. Besides that most nations strenuously endeavour to supply them from their own soil, they are usually so bulky, and so liable to injury, that they can seldom be transported far, and never but at great expense. It is only when an agricultural people are blessed with some peculiar staple, of prime importance, nowhere else produced so cheaply, that they can obtain, habitually, a fair compensation by exporting it. But in the present state of the world, when science and industry, backed by accumulated capital, are testing the capacity of every clime and soil of the globe, and the free and cheap communication which is now growing up between all the ends of the earth, enables wealth and enterprise to concentrate rapidly on every favoured spot, no such monopoly can be long enjoyed if sufficiently valuable to attract the cupidity of man. South Carolina and Georgia were, for some years, almost the only cultivators of cotton in America. As late as 1820, these two States grew more than half the whole crop of the Union. They now produce about one-fifth of it. Such is the history of all agricultural monopolies in modern times.

"But we may safely go further and assert, that even when a people possess a permanent and exclusive monopoly of a valuable agricultural staple, for which there is a regular, extensive and profitable foreign demand, if they limit their industrial pursuits to this single one, they cannot become great and powerful. Nay, they cannot now attain the front rank of nations, if they also pursue, as we do, most of the other branches of agriculture, and maintain as we do not, an independent government of their own, and exercise the power of making war and peace. The types of man have been infinitely varied by his wise Creator. Our minds are as diverse as our forms and features. The tastes, the talents and the physical capacities with which we are endowed, are as widely different, and as strongly marked for their appropriate pursuits as those pursuits have been diversified by Providence. War and public affairs call into action a large proportion of the highest qualities of man, and these, sustained by simple husbandry, did, in

ancient times, make some nations powerful and prosperous. But war is no longer profitable. National pillage is at an end, and territorial aggrandizement, a doubtful benefit at best, is both uncertain in its tenure and costly to maintain. Now, and henceforth, national grandeur, to be real and lasting, must be based upon the arts of peace. And in these noble arts, the competition of nations has become so keen and persevering, that every one must develope, to the full extent, its natural advantages, and keep in constant play each and all of the natural endowments, of each and all its citizens, or it will fall rapidly behind in the arduous but steady march of progress. The soils and climates of Italy Spain and the low countries are as prolific, and the native genius of their people is doubtless equal to what it was in the days of Augustus, Charles the Fifth, and Van Tromp. Yet they have sunk from the highest almost to the lowest point in the scale of nations. But their pursuits are no longer diversified as they once were. Their ships have been swept from the seas—their armies from the land. Their manufactures have been superseded, and commerce has deserted their ports; while they have introduced no new industrial avocations to supply their losses. All the endowments of the whole people being no longer taxed to full and wholesome action, they have languished in idleness, and national decay has, of necessity, followed. So with us. Our agriculture, though it might embrace a wide range in such a clime as ours, and furnish us with highly compensating exports, cannot, even with the assistance of public affairs, absorb all the genius and draw out all the energies of our people. The infinite variety of gifts which it has pleased God to bestow on man, must be stimulated into useful action by an equal variety of adequate rewards. It is to the never-ceasing demands of advancing civilization, in all its stages, for new arts, new comforts, new luxuries, more knowledge and wider intercourse of men with one another, that we owe all the discoveries and inventions which have ameliorated and elevated the condition of humanity. And every new conception, every new art, every new combination of pursuits, industrial and intellectual, which has expanded the genius, and augmented the power of man and nations of men, has rendered it more and more impossible for an individual of one idea, or a people of one occupation, to attain prosperity and influence.

"Since, then, even a flourishing agriculture could not, of itself, make us permanently rich or great, the greatest improvements that could be made in our present decaying system would be but a partial and insufficient remedy for the evils under which we labour. We must take a wider range, and introduce additional pursuits, that will enlist a broader interest, that will absorb all our redundant capital, and awaken all the intellect and energy now dormant in our state. On this occasion, however, we will confine our discussion to new industrial pursuits. If we look around us, we shall see that those nations only are powerful and wealthy which, in addition to agriculture, devote themselves to commerce and manufactures; and that their wealth and strength are nearly in exact proportion with the extent to which they succeed in carrying on together these three great branches of human industry. The principle of the Trinity, perfected in the Deity, seems to pervade all the works of nature and the affairs of man. Time divides itself into three parts—three lines are necessary to inclose space—a proper government must be distributed among three fundamental departments, and the industrial system of a people must, if it would flourish, embrace agriculture, manufactures and commerce, and cherish each in just proportion. Commerce, experience shows us, is the handmaid of manufactures.—Agriculture does not create it, as our own example proves, for we have literally none we may call our own. With eight millions of agricultural exports, South Carolina has scarcely a ship, or a sailor, afloat upon the seas. The Institute, whose anniversary we have met to celebrate, was founded in part, for the purpose of assisting to lift the Mechanic Arts from the low condition they have hitherto occupied in South Carolina and the South, and to stimulate our people to avail themselves of the manufacturing and commercial resources they possess. These resources are little known and less appreciated; but it is demonstrable that our Southern States possess natural advantages which enable them to compete successfully with any other in manufacturing the principal articles now required for the necessities, the comfort, and the luxury of man. While, with our abundant materials for ship-building, our noble bays and rivers, and our shore line of twenty thousand miles of sea-coast, we have only to make the attempt to obtain, beyond rivalry, the entire command of at least our own commerce. In the distribution of these natural advantages, the share which has fallen to South Carolina is not inferior to that of any of her sister States. And the present stagnant and retrograding condition of our uncompensated industry, loudly appeals to us to make an effort to secure the full enjoyment of them."

"Those nations alone are powerful and wealthy which, in addition to Agriculture, devote themselves to Commerce and Manufactures." Here is the answer to the great question. If South Carolina would be powerful and

wealthy, she must have diversification of products. But how is this great object to be accomplished?

"It is, however, strenuously contended," says Governor Hammond, "that the introduction of manufacturing into the south would undermine our free trade principles, and destroy the last hope of the great agricultural interest. It is susceptible of demonstration that the consequences would necessarily be precisely the reverse. The manufacturing people of the north desire a high tariff for no other purpose but to compel the non-manufacturing people of the south to buy from them in preference to foreigners. If the south manufactures for itself, the game is completely blocked. We will of course use the productions of our own looms and work-shops in preference to any others; and the north will then clamor, as the English manufacturers are now clamoring, for entire free trade, that they may exchange their industrial products, on the most favourable terms, with foreign nations. This result is as inevitable as it is obvious."

Here lies the difficulty. The south believes that by manufacturing for herself the game of New England would be "completely blocked;" and that it may be "blocked," the planters refuse to take *for themselves* that protection, the inevitable effect of which would be to bring about that state of things in which the whole country, north, south, east, and west, would be clamorous for perfect freedom of trade; when, in short, that protection would have ceased to be required. It is time that the farmers and planters of the Union should open their eyes to the fact that throughout the whole Union there is perfect harmony of interests, and that the south cannot block the game of New England without blocking its own. Had the tariff of 1828 been continued to the present time, the *domestic* manufactures of cotton would require at least 1,200,000 bales, and there would be now a market at home for every yard of the cloth made from it, for we should this year be making two millions of tons of iron, and mining ten or twelve millions of tons of coal, and importing a million of men to make the roads upon which the iron was to be laid, to build the furnaces and the mills for making more cloth and iron, and to wear the cloth and eat the food produced by prosperous farmers and planters, who would not then be inquiring, "What are we to do in South Carolina?"

The direct effect of the vacillating system that has been thus far pursued, has been that of building up New England at the expense of the south and west, and *the only mode* that can be adopted for restoring the south to its proper position in the Union is that of perfect and steady protection. When protection ceases or is diminished, the earliest stoppages of mills and furnaces are those of the south and west, and the latest are those of the north and east; and the reason is that the former are less capable of carrying on their business under unfavourable circumstances than the latter. The New England manufacturer is surrounded by men of large capital engaged in trade, and he can have assistance, whereas the southern and western manufacturers are in the midst of landholders, who are unable to render aid when aid is needed. The New England factories, the latest to stop, are the first to start when a change takes place, and their owners pay themselves for their lost time before the southern factories begin to move. We entreat our southern friends to look at these facts, and facts they are, as they can satisfy themselves by a study of the industrial history of every State in the Union south of Mason and Dixon's line.

What the south needs is *more factories*, not *substituted* ones. They have built mills in Georgia, but those of Maryland are closed, and those of Massachusetts are now closing. The transfer of mills from New England, Pennsylvania, and Maryland, to Georgia or South Carolina, will make no addition to their market for cotton, for if it be only a transfer, they will be as much under the control of Southern manufacturers as now they are under that of Northern ones. Let them adopt such a policy as shall ensure the transfer of the coarse machinery of Lowell to the cotton fields of the south, and the

filling of the Lowell mills with finer machinery, and they will soon find an answer to the question, "What are we to do in South Carolina?" They must make a market on the land for all the products of the land, which they can and will do, whenever they shall have satisfied themselves that the road to perfect freedom of trade lies through perfect protection.

ARTESIAN WELLS IN ALABAMA—MODE AND COST OF PREPARING.

WE tender thanks, in the name of our readers, practical and scientific, to the obliging writer of the following. Ah! if all who are, in like manner, well informed on particular subjects of importance, in respect of which practical knowledge is limited, would thus answer to respectful calls for information, how much more diffusive of useful knowledge might our journals be made.

Than the "cane-brake" region of Alabama, there is no portion of the Union we have been more curious to see—none of which we have a higher opinion, in respect of its fertility, from what we have heard, and from specimens of the soil we have seen; nor, let us add, any where we have, or have had, friends more highly esteemed for superior intelligence, high social qualities, and genuine hospitality. Alas! that the necessity of daily labour, for daily bread, should tie one down forever, like Darwin's *Vegetable Lamb*,

"Rooted in earth, each cloven hoof descends,
And round and round her flexile neck she bends."

TUSCALOOSA, May 4th, 1850.

To the Editor of the "*The Plough, Loom, and Anvil*."

SIR—In one of the last numbers of your valuable paper, you call upon your subscribers to furnish some information upon the subject of the Artesian Wells, so usual in some parts of this State, their cost, &c. I pretend to no science upon this subject, but having some experience in reference to them, I can, perhaps, make myself intelligible to your readers.

The Artesian Wells of Alabama are confined to the calcareous region called the "Cane-brake" and "Prairie," according as it is timbered or destitute of timber. It is a region of great fertility, but destitute of springs, and from the peculiar character of the soil, ordinary wells cannot be obtained. Beneath the soil is a compact soft limestone of great depth, and so impervious to water that cisterns hollowed out of it retain water like a glass bottle. This soft limestone rests upon a bed of sandstone, at a depth which varies from 100 to 1000 feet, and doubtless much greater, as that distance has been penetrated without reaching the hard rock. Below this stratum of hard rock pure sand is found, from which the water ascends through the bore and generally gushes out at the surface, in some instances in a stream bold enough to propel machinery.

The mode of boring these wells is to sink a shaft through the superincumbent soil to the compact lime rock, in which a common pump-log is securely inserted. A scaffold is then erected of poles about thirty feet high, to the top of which a block and tackle is secured; the boring then commences through the log with a hollow auger, generally of 3 or 3½ inches bore, which is worked by hand through the soft rock. When the auger is full it is drawn out by the aid of the block and tackle, the rope being usually attached to a common windlass, but sometimes, in deep wells, is worked by horse power. The mode of carrying the boring to such great depths is by means of pine poles, three inches in diameter and about thirty feet long, at one end of which is a male and at the other a female screw, and when a pole is sunk to a level with the surface, another is screwed on, and so continued until the hard rock is reached. This rock is perforated by attaching a pick instead of the auger to the first pole, which is worked by means of a large

lever. When the rock is perforated through, a copper bucket, 12 feet long, is attached to the pole; and as there is a movable valve at the lower end of the bucket, by working it up and down the sand ascends in the bucket, and is retained there by the falling of the valve, caused by the weight of the sand. When the bucket is full it is drawn up and emptied, and this process is continued until a sufficient quantity of sand is removed to enable the water to rise.

When the water does not rise to the surface, or in sufficient quantity, the sand is removed to the next layer of hard rock, which is invariably found, but at various depths. This rock is then perforated and sand again removed, and in this way four or five successive layers of rock, of sand and flint rock, are sometimes perforated.

From the nature of the soft lime rock, no piping or tubing is necessary, it being, as already stated, impervious to water; but it sometimes happens that a tube has to be inserted where the hard rock terminates to prevent the sand from flowing in with the water and stopping the bore.

You will gather from this brief narrative that it is owing to the peculiar character of this portion of the State that piping or tubing is not necessary from the surface, and is the reason why these wells are not found except in the prairie or cane-break portions of the State. The charge for these wells was formerly very high, but now they are bored at very moderate prices, as low as twenty-five cents a foot for moderate depths. When the well exceeds three hundred feet, the labour and consequently the price are increased almost in a geometric ratio, so much time being consumed in unloading the auger and bucket, and replacing the poles.

The water thus obtained is generally of the most delicious quality, as clear as crystal and sufficiently cool to be pleasant; and when it is considered that the water thus procured is to be had at any point you choose to designate, in a country which would otherwise be as arid in the summer and autumnal months, except in the neighbourhood of the large creeks, as the deserts of Arabia, some opinion may be formed of their value. I have six of these wells on my plantation in Marengo county, varying in depth from two hundred to four hundred and seventy-five feet, four of which flow over above the surface, furnishing as pure and delicious water as was ever tasted.

Dr. Withers, of Green county, bored one of these wells on the bank of the Marion River, for the purpose of supplying a steam engine with water. The supply was so abundant that he conceived the idea of boring others, and collecting the water for the purpose of propelling machinery. He bored three others, which furnish each a constant stream of water three or four inches in diameter. He has not yet applied it to the intended purpose, but there are several instances where such an application has been made of these wells in this region. They are also used for the supply of fish-ponds, and to aid in supplying mill-ponds.

This communication has been already extended beyond my intention, and prevents my giving such a view of the country as would enable a stranger to account geologically for the abundant supply of water obtained by boring in this particular region, and also for the various depths of these wells. I hope enough has been said to interest scientific men as well as practical planters to an investigation of the subject, or at least to satisfy curiosity.*

J. J. ORMOND.

* To such an investigation, some description of the topography of the country would seem to be necessary. It certainly presents a geological problem worthy of being studied and explained.—*Edit. P. L. and A.*



THE PRIZE PLAN OF A FARM-HOUSE,

WHICH TOOK THE PREMIUM AWARDED BY THE NEW YORK STATE AGRICULTURAL SOCIETY IN 1838—AWARDED TO MRS. SANFORD HOWARD OF THAT STATE.

EXCELLENT as this plan seems to us to be, combining beauty of exterior with economy and convenience of internal structure and arrangements, we confess it has for us, and in our eye, a still stronger recommendation—that of being the suggestion of the mind of a good housewife, obviously devoted to useful and appropriate study. What reflections does not this fruit of well-directed study lead one to make on the ill-judged course of female common-school

education generally, and on the idle and frivolous course of novel reading too usually indulged in by the females of our country? But we have no time to follow with our pen where our thoughts would lead us. Every reader will be ready to unite with us in the inference, that those who so well know how to plan, will quite as well know how to keep a good farm-house. May all such meet in the right quarter, with the support and reap the honours they deserve, for of such it may be safely predicated, "the heart of her husband doth safely trust in her, so that he shall have *no need of spoil*."

ALBANY, May 7th, 1850.

JOHN S. SKINNER, Esq.—Agreeably to your request, I herewith forward the plans of a farm-house, which received the premium of the New York State Agricultural Society at the January meeting, 1848.

The main object of the projector has been to furnish the best *ground-plan* for a complete farm-house. The style of finish being regarded as a secondary matter, may be chosen according to the taste and circumstances of the builder. The representation here given is ornamental, and at the same time compatible with convenience and comfort.

The committee who submitted the report in reference to these designs make the following remarks:—

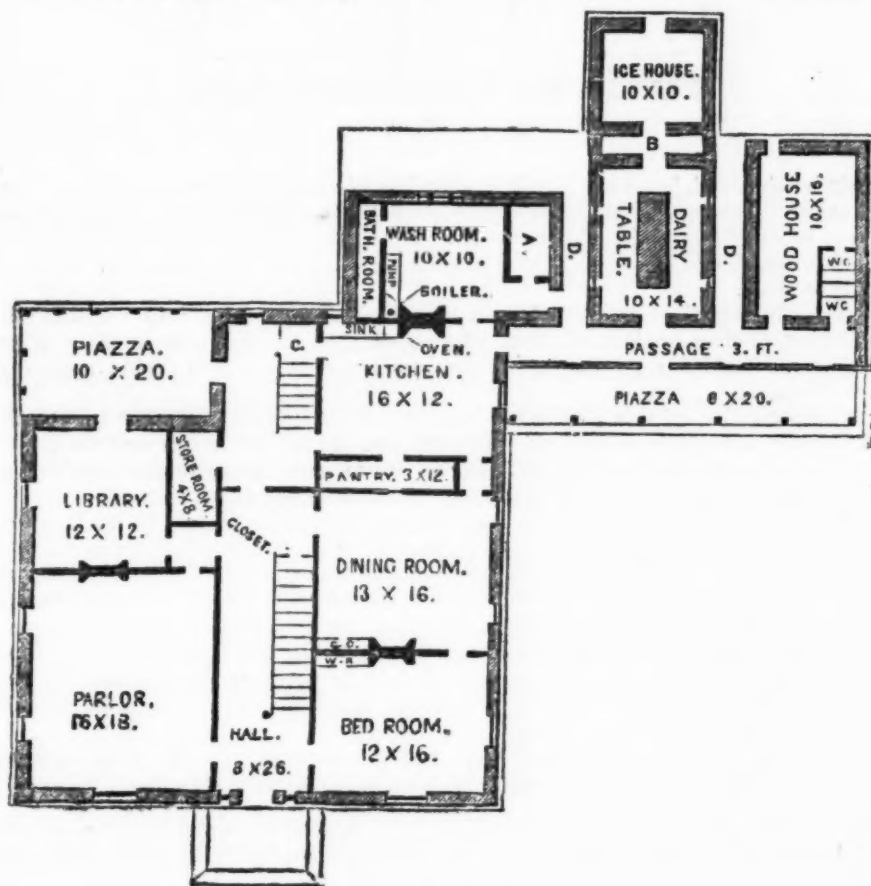
"The ground-plan gives an excellent and convenient arrangement, which could not be better described than in the lady's own words. The committee would say one word on the mode of warming houses by means of heated air from a furnace, which is adopted in the plan offered. The same correct notions of conveniences and comforts that suggested in the plan many of its arrangements, also suggest this most effectual, most economical, and least dangerous method of throwing a summer heat into all parts of even a large building. This supersedes all fires, excepting that essential bed of living coals in the kitchen."

For the details, I must refer you to the description herewith appended, furnished to the committee by Mrs. H. herself.

Yours,

SANFORD HOWARD.

The accompanying plan is designed to front south, with an elevation of thirteen feet

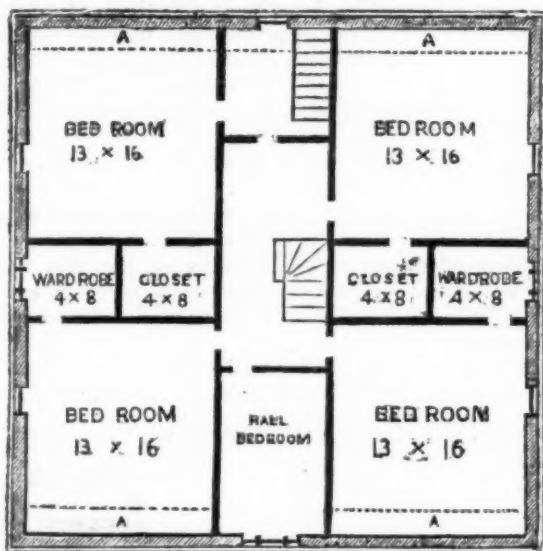


Ground-Plan.

from the sills to the roof. It should occupy somewhat elevated ground, sloping a little to the north, and should be raised on an underpinning to suit the ground. To give chambers of the size designated, the apex of the roof should be not less than twenty-two or twenty-three feet above the sills. It is highly proper to leave a *space* for air between the finish of the chambers and the roof, which will prevent the rooms from becoming heated in summer.

The site should be selected with a view to the easy construction of drains from the sinks, bathing-house, dairy, &c., directly to the piggery or barn-yard.

It is of course expected a good farmer will have a good cellar, and in some situations the best way of warming a house is by a hot-air furnace in the cellar.* The size of the cellar and its particular divisions should of course depend on the wants or circumstances of the builder. In some cases it may be expedient to have it extend under the whole of the main body of the house.



Second Floor.

It may be observed, however, that it is not advisable to store large quantities of vegetables under dwellings, as the exhalations from them, especially when unsound, are known to be decidedly prejudicial to health. Hence the *barn-cellar*, and not that of the dwelling-house, should be the repository of such vegetables as are wanted for the use of domestic animals.

Directions in regard to warming houses by furnaces may be found in works relating to the subject, or may be obtained from persons engaged in their construction. There are various modes; but my own experience does not enable me to decide upon their relative advantages.

In the construction of this plan it has been my object to combine utility and beauty, as far as practicable, with the *labour-saving* principle. In the arrangement of the kitchen and dairy, particularly, special regard has been had to securing the proper requisites for those important departments with the greatest practicable degree of convenience.

In constructing a dairy, it is proper that such an excavation should be made as will leave the floor, which should be made of stones, two or three feet below the surrounding surface. The sides should be of brick or stone, and plastered; the walls high, and the windows made so as to shut out the light and admit the air. The advantage of *thorough ventilation* and pure air is acknowledged by every one who has ever paid attention to the manufacture of butter, though it is a matter generally too little thought of in the construction of apartments for this purpose. It will be observed that, in the plan herewith submitted, an open space of two and a half feet has been provided for on three sides of the dairy.

To render the establishment as perfect as possible, the command of a good spring of water, which may be conducted through the dairy-room, is necessary; when that cannot

* This is getting to be a very common practice in Philadelphia—to have chimneys with sham fire-places; but the great surgeon of Baltimore, Doctor Smith, has built himself and is living in a magnificent dwelling that has no chimneys at all.—Ed. P. L. and A.

be had, an ice-house in *direct contact* (as in the accompanying plan), and a good well of water convenient, form the best substitutes.

The expense of such a house in this vicinity might be varied from fifteen hundred to three thousand dollars, according to the style of finish, the taste and ability of the owner, &c. The main conveniences may be retained at the lowest estimate by omitting the ornamental front.

M. W. HOWARD.

PRICES OF WHEAT.—I send you another table relating to the prices of wheat, from the official reports obtained by Mr. Wilson, and alluded to in the debate in the House, on the 21st ult. As a multitude of figures, however, are not very attractive reading, I have shortened it as much as possible, merely stating what is absolutely necessary to make the results clear to the eye. I believe the accuracy of the figures may be depended on.

It gives the prices of wheat for the last ten years in France, Belgium, the Prussian Provinces (averaged on those of Pommerania, Posen, Saxony, Silesia, Westphalia, and the Rhenish districts), and also the shipping prices, during the winter season, at the ports of Amsterdam, Lubeck, Hamburgh, and Dantzic.

These afford, together, a fair average of what may be called the European prices for the period referred to. I should be glad if the port of Odessa were included; but its great distance, the less suitable quality of the wheat, and its comparative independence of our consumption, from its contiguity to the Mediterranean demand, render its influence not so great as that of the Baltic ports upon the English market. The table will repay study.

Average price of wheat per quarter in France, Belgium, Prussian Provinces, Amsterdam, Hamburgh, Lubeck, Dantzic, all united.

	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1847.	1848.	1849.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
England	46 4	49 8	41 3	40 2	35 5	47 9	54 0	62 3	42 2	36 6
	66 4	64 5	57 5	50 2	51 3	50 9	54 9	69 5	50 6	44 6
Difference	20 0	14 9	16 2	10 0	15 10	3 0	0 9	7 2	8 4	8 0

It will be seen from the above table that the two years of greatest plenty over Europe, during this decennial period, have been 1844 and 1840.

LORD LUCAN is probably the most extensive tillage farmer in Great Britain. He has at present upwards of 10,000 acres under his personal superintendence, having farm stewards on the different farms, who all take their instructions from himself. He has this year upwards of 1000 acres of white crop, and between 400 and 500 acres of green crop. He has a stock of 800 cattle, 60 of which are working bullocks, and 600 sheep; he has 40 horses, and gives employment on his farms to 600 men, including those who are making drains. After some other observations to the effect that Lord Lucan's system of management is admirable as to agency and superintendence in every department, from his lordship's practical knowledge of "HIS OWN BUSINESS," which he has not disdained to learn fully.

Governor Lloyd of Maryland owned fourteen farms, which he too superintended, personally, with managers on most of them—but such has been the improvement in that country since his day, that, we believe his elder son makes much more acre for acre. In fact, no part of the country is improving more visibly and steadily than most of the counties on the Eastern Shore of Maryland, perhaps we might say particularly Talbot and Queen Anne's and Kent, where they have free and frequent recourse to good ploughing—lime—guano—bone-dust and—*agricultural periodicals*. They find themselves remunerated ten times over in the increased products and rising value of their lands. Thus will it, and thus ought it, always to happen, with men who habituate themselves to *inquire and to think!*—Edit. P. L. and A.

THE MARYLAND STATE AGRICULTURAL SOCIETY.

Maryland State Agricultural Society—Its last Quarterly Meeting—Proceedings and comments on.—Large premium offered for a PORTABLE hay-press.—Agriculturists of Maryland resolved to act hereafter "in a body," before the election.—Introduction of guano in the United States and in England.—Analysis of it by distinguished chemists of France and England, with other matters.

THE Society held its quarterly meeting at Baltimore, on 1st of May. It is said it

"Was well attended, and we are happy in being able to announce that the members present from various sections of the State gave assurance that the fall exhibition will be attended by a largely increased number of the farmers from this and other States. The most enthusiastic feeling pervaded the meeting, and the proceedings of the day evinced a zeal in the cause in which they are engaged which gives the fullest assurance that the agricultural interest of our State is fully aroused to the importance of its position, and a determination to press forward every measure calculated to promote this great interest of the country."

We should like to have seen delegates in attendance from at any rate more than half the counties of the State. Those who did attend, certainly evinced a zeal highly honourable to themselves, and promising the best results, as far as depends on them.

The President, CHAS. B. CALVERT, Esq., (always true to his trust) took the chair, and called the attention of the members to several subjects requiring their action—among them the finances, and the prize list for the fall exhibition.

Mr. SANDS, the Secretary, presented and read sundry letters from Vice-Presidents of the Society, apologizing for their necessary absence from the meeting, but pledging themselves to co-operate in every measure recommended to carry out the objects of the Society.

How easy to write letters, if that could acquit us of our duty! But were all to content themselves with writing letters, what would become of the Society?

Also various letters from gentlemen of other States, approving the formation of a Central Society for the middle Atlantic States, tendering their aid in extending its usefulness, and asking to be enrolled as members of the Society.

The report of the Treasurer was then read—the receipts and expenditures to date showing a balance on hand of \$66.70. The Treasurer stated that there was a claim against the Society for balance due for lumber, and also for rent of hall, &c., for which it was necessary to make provision.

The President remarked that it was customary in the Northern States, for the cities or towns in which the great exhibitions are held, to come forward with an offer to furnish the necessary accommodations for the same, amounting in most cases to 3 or \$4000—the immense amount of money expended by visitors being an object to elicit great competition for the privilege. The President stated, moreover, that there had been made to him propositions from several places, within the proposed limits of the Central Society, to act in a similarly liberal spirit for the obtainment of the same privilege. He thought that the casual receipts of the Society should be applied to other objects of interest, and that the citizens where the exhibitions are held should feel obligated to furnish fixtures for the show.

On motion of Mr. Kettlewell it was

Resolved, That a committee of seven be appointed to call the attention of our citizens to the importance of such exhibition to their interests, and to solicit a subscription for the purpose of defraying such contingent expenses.

The resolution was read and unanimously adopted, and Messrs. Kettlewell, Wharton, Millburn, Lockett, Reynolds, T. W. Levering, and R. Sinclair, Jr., appointed the Committee.

Inquiries having been made as to the fate of certain memorials to the Legislature,

presented by the officers of the Society, for the enactment of a law for the preservation of sheep, and for the aid of the State to the funds of the Society—the President, who was Chairman of the Committee, reported that neither of these measures had been adopted by the Legislature—that notwithstanding nearly two-thirds of the members were farmers, yet all other objects presented to their consideration seemed to have weight and influence with them sufficient to secure their adoption; but it was too often the case, that anything calculated to advance the agricultural interest was suffered to lie on the table, and sleep the sleep of death. He thought the time had arrived when it was due to themselves that the agriculturists should *attend to their own interests, and command that attention and respect which their number and influence entitled them to expect at the hands of their servants*—and therefore offered the following resolutions:—

Resolved, That the rejection of the propositions offered to the last Legislature, for the benefit of agriculturists, is surprising and unaccountable, and calls for the most unqualified censure of all who are dependent on that profession for support.

Resolved, That the profession will, *in a body*, before the next election, take such measures as will secure their interest in future.

The resolutions were read and discussed at some length, and finally adopted with great unanimity.

With great deference we think it neither “surprising” nor “unaccountable.” Neither will it ever be otherwise, while party spirit supersedes public spirit; and while the question with every voter, as to every candidate for the high office of legislation, the highest that any man can exercise, is not, has he the most capacity and the strongest determination to understand and to forward the interests of agriculture in proportion to its importance? but—*is he the strongest man of our party?*

The profession will, *in a body*, before the next election, take such measures as will secure their interest in future! Well—“*nous verrons*.” we shall see, and be much and most agreeably mistaken, if the profession is not seen to go as usual, not in *one* but in *two* solid bodies.

The premium list was then reported, preparatory to which a short address was read by Geo. W. Dobbin, Esq., Cor. Sec., to accompany the same, which was adopted. The increase in the amount for the list of prizes is generally one-third, and in many cases 50 per cent. on the last year's appropriation. Among the new objects for which premiums are offered is a portable steam-engine for farm purposes—the liberal sum of \$100 is appropriated therefor—and \$25 for the best hay-press.

This resolution, offered by Mr. Horsey, to secure a *portable hay-press*, we look upon as one of great importance, too obviously so to require that anything should be said to illustrate it. Such an apparatus, if not too expensive and complicated, might be taken from farm to farm, and thus, by compression, make thousands of tons of hay and *straw*, available, that will not admit of transportation to market, in bulk—and the owner of the machine might be paid in money, or, like the miller, in a certain proportion of the substance.

This is the sort of effort at real improvement,—an indication of thought on the part of agricultural societies, which gives signs of real vitality and usefulness.

A committee of three, consisting of Messrs. Calvert, Dobbin and Sands, was appointed to *obtain an orator* to deliver the annual address.

Mr. J. C. Walsh offered the following resolution, which was read and adopted, and Messrs. Walsh, Dobbin and Worthington were appointed the Committee:

Resolved, That the Senators and Representatives in Congress from this State be and they are hereby requested to urge upon the National Executive the propriety of opening negotiations with the Peruvian Government, for the purpose of having the restrictions at present existing removed from the trade in guano, an article becoming of such great importance to the farmers of this country, and that a committee be appointed on the part of the Maryland State Agricultural Society to co-operate with the Congressional delegation.

What a change, as here indicated, has come o'er the spirit of their dreams, among Maryland farmers since 1824! In that year, the editor of the *Plough*, the *Loom*, and the *Anvil* (still toiling for the same interest, but not then, as

now, looking exclusively to the fruits of his labours in the cause for his own subsistence), distributed in Maryland two barrels of guano, received directly from the Pacific, and with the substance itself, sent out translations from Ulloa and from Humboldt, as to its nature and uses.*

The following is the description of this manure, received and distributed with the substance by Mr. Skinner twenty-six years ago. We give it as a piece of agricultural history which may possess some interest for the young reader of the present day.

This substance, to which the naturally sterile coasts of Peru owe their fertility, had already been partially described by Don Ulloa. Messrs. Humboldt and Bonpland have, however, more recently, by communicating specimens of it to Fourcroy and Vauquelin, furnished an opportunity of becoming satisfactorily acquainted with its nature. The analysis of it, made by the latter named chemists, and which is detailed in the 56th vol. of the *Annales de Chimie*, gave the following result:—

- 1st. A fourth part in weight of uric acid, partly saturated with ammonia.
- 2d. Oxalic acid, partly combined with ammonia and potash.
- 3d. Phosphoric acid, united to the same bases, and to lime.
- 4th. Small proportions of the sulphates and muriates of potash and ammonia.
- 5th. A small proportion of fatty matter.
- 6th. Small proportions of silicious and ferruginous sands.

In Rees' Cyclopaedia, the guano is described as a yellowish-brown earthy substance, *without taste*, and of a smell resembling that of castoreum.—The specimen furnished by Midshipman Bland has a *saline taste*, and a slight castoreum odour.—Exposed to the fire, it blackens and emits strong ammoniacal fumes, as observed by Sir H. Davy.

It is found in strata of from 50 to 60 feet in thickness, which are worked on the surface, in the same manner as iron ochre mines. The island of Chinche, near Pisco, on the more southern coast of Peru (nowhere, however, observes Mr. Humboldt, but between the 13th and 21st degrees of S. lat.), and the small islands of Ilo, Isa, and Arica, furnish it in abundance. These islands are visited by immense flocks of birds, principally of the heron and flamingo genus (*Ardea* it *Phaenicopterus*.—Cuv.), that tarry there through the night. Hence the guano has been considered as produced entirely by them; but it can scarcely be possible that such immense strata should have been accumulated in that way alone. The question then suggested by Mr. Humboldt, is whether the guano might not be considered as the product of one of the revolutions of the earth, and classed with the formations of coal, and fossil wood? Mr. Guido Ricci has consequently proposed to give it a place in our mineralogical systems, under the name of *Ammoniaque Uratée*, (Urate of Ammonia,) or at least to consider it as a natural product.

From the composition of the guano, it is easy to conclude its fertilizing properties, and it must be judged to be a powerful manure. Sir H. Davy observes that it requires water for the solution of its soluble matter to enable it to produce its full beneficial effect on crops. Its principal application is to corn; but it must be used in small quantities, its causticity being fatal to the roots of the plant, when used too freely.

Messrs. Humboldt and Bonpland, to whom, as before observed, we have been indebted for the means of ascertaining its value, further remark:—that the inhabitants of Chancay, engaged in the transportation of this manure, perform the voyage to and from Chinche, in twenty days, in boats called *Guaneros*. Each boat containing from fifteen hundred to two thousand cubic feet of guano.—The price of the vanega, (1 3-5 bushel) at Chancay, is four francs (80 cents); at Arica, 15 francs (\$3); making it, as may be perceived, a very profitable business. It is said that the strong ammoniacal smell which the guano emits would cause those unaccustomed to its neighbourhood to be incessantly sneezing.

It may be here observed, that the dung of pigeons, and of other birds, which bears

* Dr. Lindley, the highest authority, recommends that, when applied for gardening purposes, "you should not use less than 3 cwt. an acre; it should be mixed with four or five times its bulk of earth, and applied in wet weather, or with water, when crops are beginning to grow. The same strength will do for Geraniums, &c., in pots; it should be applied occasionally, till their rapid growth shows that it is beginning to tell, and then be discontinued. All liquid manure should be used very weak, and applied in the same manner.—This substance [guano] proves injurious to the vegetation of kitchen-garden seeds if they come in contact with it unmixed. It is best to mix it well with a quantity of good soil, and then dig it in as if it were common manure, immediately before the crops are sown or planted. For asparagus it will be best mixed with water, and applied at intervals during the growing season." And for tobacco or corn, it may be thus mixed and sowed broad cast, and ploughed in.

much analogy to the guano, is known to form a very valuable manure. Hence, in France, it has been proposed to use, for the same effect, those immense accumulations of bat dung, which occur in the extensive caves of the Department of Yonne.—In this country, the soil under the woods, where great flocks of the wild pigeons roost, must be highly impregnated with their dung, and would no doubt, form an excellent manure.

It received then but a passing notice, however, although there was a spirit of agricultural improvement, as active then as now. And why is it, then, the reader will say, that the average acreable product throughout these States has not increased in this lapse of a century? No man living has asked himself that question oftener or more anxiously than the writer; and the conclusion to which he has arrived with confidence is, that it is because of the *fluctuating policy* and the “free trade” delusion, otherwise properly called by General Jackson, subjection to the policy of British merchants, which keeps other countries from protecting their own labour and developing their own resources—which, in a word, tends to keep men wide asunder; to prevent their combination; and thus, while it undermines the prosperity of all other industries, thereby destroys or prevents the prosperity of agriculture itself. In a word, that baneful policy which keeps the loom and the anvil far asunder from the plough, forcing us to go abroad for cloth and iron manufactured for monopolists of lordly wealth, by starving operatives, instead of being manufactured here, near to the planter and farmer, out of our own abundant materials, by free and thriving men and women who would be able and willing customers to the planter and farmer. To return to the history of our use of guano. It received, when distributed in 1824, as before said, but a passing notice; was said to be most powerful when applied to Indian corn; but there the matter was dropped until it was used and recommended on the experience of *English farmers* about ten years ago—sixteen years after an ample opportunity had been presented to test it in Maryland, with authentic accounts of its virtue and uses. Generally, the easy cry is, “Oh! don’t tell us about English machinery, English grasses, and English processes and practice. They won’t suit our country—our climate is so different.” And this is the convenient excuse of many who never so far studied the climate of either country as to be able to tell the average medium temperature or fall of water in the one or the other. Now, however, it seems that guano can’t be had fast enough, either there or here.

In England, by a parliamentary return, printed by order of the House of Commons, the importations of guano into the United Kingdom for the last nine years were as follows:—

1841.	1842.	1843.	1844.	1845.	1846.	1848.	1849.
2,881 tons.	20,398.	3,002.	104,251.	283,300.	89,392.	71,414.	83,438.”

Quere? we wonder when we shall see the representatives of the cultivators of the soil in our “House of Commons” instituting such inquiries and publishing such returns? Can any of them tell—do any of them ask for—the quantity of guano imported, and the duty paid on it? or the quantity of madder, or woad, or liquorice, and other things that we might raise if properly encouraged, as we might make all our wine and all our silk, instead of importing, not these only, but beef and flour, in the shape of coal and iron, to be laid down through the coal and iron regions of Maryland and Virginia! Ah, we are a glorious—a wise people! ready, we cultivators of the soil, to go in a body *before* the election, to command that respect which our numbers and influence entitle us to expect at the hands of “our servants”(?) Yes, before the election. But how *at* the election?

There is, in fact, proof that the fertilizing properties of guano were known more than two hundred years ago; and the slowness with which the use of it has spread over the world only adds another to the thousand proofs of the

want of that *appropriate education*, on the necessity for which we published *numerous elaborate* and exceedingly well-prepared essays *thirty-years ago*; and the effect of which education would have been that agriculture would ere now have become sure enough, what it is sometimes called—a “profession.”

That guano was thus known in Europe more than two centuries ago, is proved by the following curious passage from “the first book of the art of metals, &c., written in Spanish, by Alvarado Alonzo Barba, Master of Art, Curate of St. Bernard’s Church, in the imperial city of Potosi, in the kingdom of Peru, in the year 1640. Done into English in the year 1669.”

“Out of the islands in the South Sea, not far from the city of Arica, they fetch earth, that does the same effect as the last-mentioned. It is called guano (*i. e.* dung), not because it is the dung of sea-fowls, as many would have it understood,” (rather out there, Master Alonzo Barba), “but because of its admirable virtue in making ploughed ground fertile. It is light and spongy; and that which is brought from the island of Iqueque is of a dark-gray colour, like unto tobacco ground small, although from other islands nearer Arica they get a white earth, inclining to a sallow, of the same virtue; it instantly colours water whereunto it is put, as if it were the best ley, and smells very strong. The qualities and virtues of this, and of many other simples of the new world, are a large field for ingenious persons to discourse philosophically upon, when they shall bend their minds more to the searching out of truth than riches.”

Ay, *when*, sure enough, will that time come? Is not California doing now for us what the gold mines of Peru did for Spain? drawing off labour from more useful channels, disturbing the minds of the people with dreams of enormous accumulation, generating contempt for the duller pursuits of sober industry, and sowing broadcast the spirit of speculation and the seeds of national corruption, threatening already the very existence of the Union!

Having given the analysis of guano twenty-six years ago, by two distinguished French chemists, it may be well here to add, once for all, the more modern analyses by Professors Ure and Johnson:—

“GUANO.—Dr. Ure’s analysis of a first rate Bolivian guano, and of Chincha guano from Peru, respectively give the following results:—

	Bolivian.	Peruvian.
Per centage of ammonia	15.244	16.25
Phosphate of lime, magnesia	26.5	22.5
Water	6.5	10

Professor Johnson gives the following account of guanos:—

Variety.	Water, per cent. from	Organic Matter, from	Phosphates, from
Bolivian	5 to 7	56 to 64	25 to 29
Peruvian	7—10	56—66	16—23
Chilian	10—13	50—56	22—30
Ichaboe	18—26	36—44	21—29
Saldanha Bay	17—34	14—22	45—56
Patagonian	14—40	16—38	17—40

The following is the average of 32 specimens of Peruvian guano, very recently analyzed by Professor Way, in England.

	Per cent.
Water	13.09
Organic matter and salts of ammonia	52.61
Sand	1.54
Earthy phosphates	24.12
Alkaline salts	8.78
	100.14

The organic matter named above contains ammonia corresponding to a per centage of 17.41 in the guano.

But to return to the proceedings of the Maryland State Agricultural Society:—

"Mr. J. T. Earle offered the following, which was read and unanimously adopted:—

"*Resolved*, That the response made to the Appeal from this Society to the agriculturists of other States, to aid in the formation of a Central Agricultural Society for the Middle Atlantic States, is in a high degree gratifying; and we urgently invite the attendance of all interested in the pursuit of agriculture, to assist at our next annual meeting and exhibition, in October, to carry into effect the objects contemplated in said Appeal.

"Various other matters of interest were attended to, the report of which, together with the premium list, will be published by the Secretary in the next No. of the American Farmer.

"The day for the annual meeting of the Society was fixed for the evening of Tuesday, the 22d October, and the exhibition to commence on Wednesday, the 23d, and continue three days."

When the list appears, we may be tempted to review it for general purposes, and in a spirit of good-will and anxiety for the beneficial results of all movements made for the welfare of agriculture in that good old State, from which inexorable necessity only could have driven us, to seek that support, which after thirty years of untiring devotion to the landed interest, we could not find within her borders. That it was not from any disinclination to labour, we refer to the article in this number headed "CONFABULATION, between his patrons and the editor of the Plough, the Loom and the Anvil," where it will be seen and proved, that before he has a picayune left for himself, he has to earn and pay away about \$5000 a year!

TO MAKE A CEMENT,

THAT WILL SET UNDER WATER, AND, IN A FEW YEARS, BECOME HARDER THAN STONE.

LIMESTONE of a deep blue colour, is to be procured, and pit coal to burn it with, in the common manner.

When the lime is withdrawn from the kiln, the coal ashes are taken out with it, and all the sizeable pieces of lime being picked out, there remain the coal ashes, mixed with about one-fourth its weight in lime dust.

About a bushel of these materials is put into any suitable vessel, sprinkled with water just sufficient to slack the lime. Another bushel is then heated in the same way, and so on until the vessel is filled. In this state it can be kept for any length of time in a moist place, protected from frost and sun.

A strong open trough, containing about two cubic feet, is two-thirds filled with the cement in the above state; and with a small iron pestle suspended at the end of an elastic pole, is well beaten for about a half an hour. At the end of this time it becomes of the consistence of soft mortar, and is then laid in the shade, from three to six days, according to the dryness of the air. When sufficiently dry, it is again beaten half an hour as before, and the oftener it is beaten the better will be the cement: ten times, however, are in general sufficient to reduce it to the consistence of a smooth uniform paste. After this period, it is apt to become refractory on account of the evaporation, as no more water is to enter the composition of the cement than what was at first employed to slack the lime.

Thus prepared, it is to be used as common mortar; and is found to possess the singular advantage of uniting, in a few minutes, so firmly to the bricks or stone, that still water may be immediately let in upon the work without any inconvenience; and, by keeping it dry for a single day, it has afterwards nothing to fear from the most rapid current.

FOR PRESERVING EGGS.

IN March put about half a pound of quicklime in a stone or earthen pot, and add a gallon of cold water; next day fill the pot with new eggs, tie a paper over it, and put the pot in a cool place. The eggs will be found perfectly good after being kept a year.

GARRETT'S HORSE-HOE AGAIN.

NONE can well be more aware than we, of the unsuitableness of much of the costly and complicated agricultural machinery of England, to common use in this country, where much more than in England agricultural improvement is retarded for the want of capital. That is the case in fact over all the world, but eminently so with us, where land is of all things the cheapest and most abundant; bad enough, Heaven knows, before, but now since the conquest and annexation of Texas and other Mexican territory, much worse. Nevertheless, it is far from being true, that therefore, or any how, we should not be made familiar with the structure and uses of implements, however costly, which are pronounced by men of the soundest judgment, to be indispensable to success; and that in a country, as we have before said, where thirty bushels of wheat to the acre is as common as half that crop in the United States.

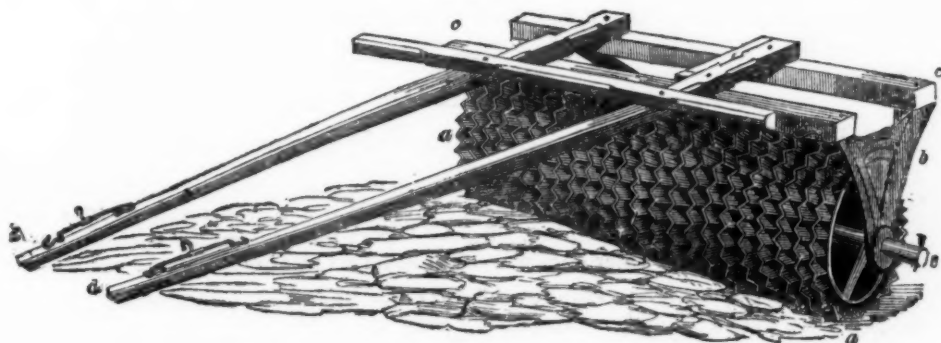
The same objection if any, that may be made to a notice and exemplification of the English horse-hoe, and its uses and effects, might have been made to the same sort of notice of the English *drill machine*. Who would ever think of recommending that cumbrous and expensive contrivance to practical use in this country? Yet are we the less indebted to those who supplied the first machine or model, to be improved upon by Yankee ingenuity? And why may not the horse-hoe be improved in like manner? Will any one say, that it would not be attended with the best results, (if it can be done,) to cultivate our wheat crops, not only for the free admission of air and moisture to the roots, but to the extirpation of the grass and weeds, with which almost every wheat field is now infested, at the expense and robbery of the staple crop, to the extent of nourishment yielded to all extraneous growth? Why not if we could, (as in England they *do*, with the drill horse-hoe,) cultivate and keep clean our small grain, as well as our Indian corn and root and tobacco crops? No! with our farmers the danger is, not that they will be heedlessly led into impracticable and extravagant experiments in the practice of their art, but that they will be too unenterprising and indolent, to adopt such as have been *proved to be eminently economical and efficient!* Take for an example, the very simple and very efficient contrivance, invented by Mr. Gray, of Virginia, and so strongly recommended by the experience of Judge Carmichael, of Queen Anne's, Maryland. We mean the *drag-log for pulverizing the soil*; so simple, that any one could make it who can handle an axe and an augur; and more efficacious as we know, than any roller for the same purpose; yet out of the many thousands of farmers who have read of it, and who doubt not the truth of what is said of it, how many have ever gone to the trouble of having one made, though it need not cost them *one dollar*? Are there two dozen, are there *two* to be procured in any county in Maryland? Now in place of this cheap and simple implement, consisting of a log of twelve or fourteen inches square, and four or five feet long, with a common cart tongue pinned down at right angles on the *top* of it, we might recommend the famous English "*clod-crusher*," Crosskill's, made after the following fashion, and what then? Why the cry would be raised, "how foolish it is to be giving us the form of such costly things, so far beyond our means!" and this very cry would be raised by those, who have not the spirit to bring into use a *drag-log*, that could be made by any field hand of common sense, in one day at most. Let us only then repeat, that in calling attention to the English horse-hoe, so much in use, and considered so invaluable, by the best farmers in England, our intention was to present it as a matter worthy of attention, and

as an implement that is probably as susceptible of being simplified, improved and adapted to use in this country, as the English drill has been; *and moreover*, we do confess to an ambition, that would lead us to assist in gratifying that desire, which we are prone to apprehend exists on the part of *such readers as ours*, to be made familiar with whatever is connected with, and considered accessory to the progress of agricultural improvement in other countries, even though it be not exactly adapted *per se* to our own.

CROSSKILL'S CLOD-CRUSHING ROLLER.

"Crosskill's *clod-crushing roller* is one of the most efficient implements of this class, and is here represented in fig. 1, which is a view of the machine in the working state; but

Fig. 1.



to convey any idea of its construction we must exhibit it somewhat in detail. With this view, fig. 2 is a side elevation of one of the individual wheels or plates that go to form the body of the roller, and consists of a ring or web of 30 inches diameter over the extreme points; the web is $2\frac{1}{2}$ inches broad and $\frac{3}{8}$ inch thick, formed into angular-pointed

Fig. 2.



SIDE VIEW OF ONE WHEEL OF THE CLOD-CRUSHER.

Fig. 3.



EDGE VIEW OF THE WHEEL.

teeth. The ring is supported on the four feathered arms, and an eye formed in the centre 3 inches in depth and $2\frac{1}{2}$ inches diameter, fitted to move easily on the axle of the roller. Corresponding to each tooth of the wheel, studs are cast on each side of the web, which project 1 inch from it, as seen in fig. 3, an edge view of the wheel, where *aaaa* are the projecting studs, and *b* the eye, showing also the feathers of the arms. The wheels thus formed are threaded, to the number of 28, upon a round axle, $2\frac{1}{2}$ inches diameter, upon which they are at liberty to turn separately, making up the body of the roller *a a*, fig. 1, to a length of 6 feet. A cast-iron end-frame *b* is then placed on each end of the axle, and these are bolted to the wooden transverse bars *c c*, and to these last also the horse-shafts *d d* are bolted. The axle is prolonged at each end *e* to an extent of 4 or 5 inches, forming the arm on which the carriage-wheels are placed for the removal of the roller from one field to another. The carriage-wheels are also of cast iron, 3 feet diameter, plain of course on the sole; and when these are to be placed or removed, a hole is dug in the soil under each wheel, until the wheel turns freely round and can be moved on or off the axle, the roller then resting on the ground; but when the carriage-wheels are shipt on the axle and brought on level ground, the whole

weight is borne by them, while the body is 3 inches clear of the surface. In this state it is traveled from field to field, and, when about to be worked, the carriage-wheels are removed by the process just described.

"The effect of such a roller upon rough clay land may be easily conceived, and that where such a great number of *points* are brought into contact with the indurated clods, the result must be their reduction to a state approaching to the granular, especially if the operation is repeated. The effect is entirely different from that of the plain roller, for with it, if a clod does not crumble at once with its pressure, it is forced downward into the soil in a still solid state; whereas, with the one now described, the numerous points, acting like so many wedges, will almost infallibly split such a clod into numerous fragments, and repetitions of the process will produce a well pulverized surface."

We don't recommend the above, mind, for imitation and use in this country, but to let the curious reader see what is fashionable in other countries, and to make of it any other use that his ingenuity may suggest.

GUANO.

In the "*London Gardeners' Chronicle*" it is recommended,

"Before applying guano as a top-dressing to a lawn, mix it with six or seven times its bulk of ashes, peat, or soil of some kind, or it will burn the grass; and for this reason it should be applied in wet weather. Scatter it over the grass at the rate of 4 cwt. to the acre. Use clear soot-water once a week, and liquid guano once every six weeks."

Of course the same precaution should be observed when used as a top-dressing for anything else. When applied to Indian corn in the hill, care must be taken to place it near, but not in actual contact with the corn. This, however, must be a tedious process: we would recommend that farmers who desire to use it with corn and tobacco, should contrive to obtain a drill, such as is common in England, for distributing artificial manures, and so apply it just before planting. In the mean time, however, let the guano be mixed with slaked ashes or mould, and applied to the hill to prevent its coming in too direct contact with the plant.

We see no good reason why Indian corn and tobacco should not be cultivated in drill form (having the same number of plants on an acre) as well as turnips and mangold-wurzel, carrots, &c. The late FREDERICK SKINNER, of Calvert county, Maryland, was the first to dispense with *hills* for tobacco; ploughing deep, putting the land in fine tilth, and planting by a simple marking machine on a smooth surface. And, here, it is no more than is due, from the son to the father, and, assuredly, none the less, that he was a father that any son might be proud of, to say that he remembers no case of an improved implement, no artificial manure, no new labour-saving contrivance or process, in that county, that was not invented or introduced by him.

Young, we are aware, says, in his "*Night Thoughts*," as to biographical notices of departed excellence:—

"Who writes to share the fame of the deceased,
So high in merit, and to him so dear!
Such dwell on praises which they think they share."

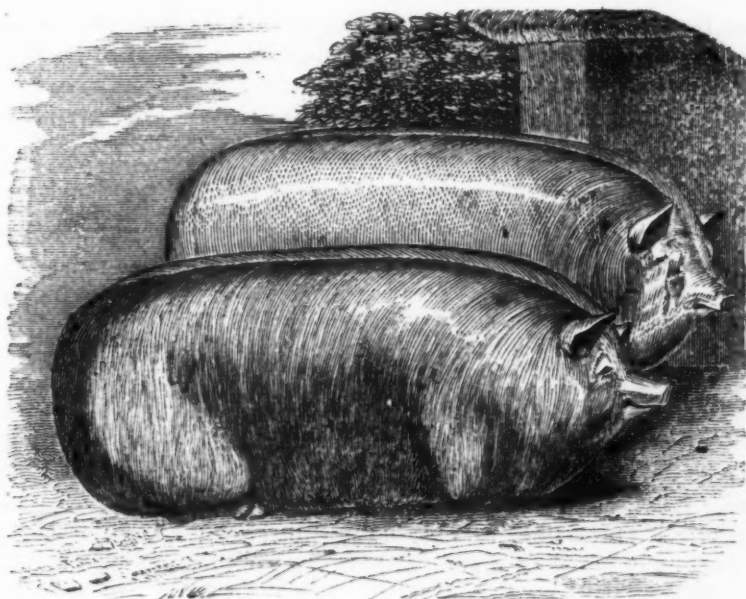
Submitting to encounter the suspicion, for our own part, we only wish we could claim a share of his excellence of character, and his mechanical genius, as we do claim to have inherited his fondness for agriculture, his thirst for knowledge, and his love of truth—in respect to which last, let us quote again, for our young readers:—

"More worth is she than pearls, therefore seek her carefully: the emerald and the sapphire and the ruby are as dirt beneath her feet; therefore pursue her manfully.

"The way to her is labour; attention is the pilot that must conduct thee into her ports. But weary not in the way, for, when thou art arrived, the toil shall be to thee for pleasure."

For the use of guano, see other notices in this number.

MIDDLESEX PIGS.



THE portraits of fat pigs, which are here presented, represent what is known among swine-breeders and connoisseurs in *hogology*, as the old *Middlesex breed of pigs*. When it is considered how necessary and how easy it is to modify the shape and properties of the hog, to adapt them to the various circumstances and uses of their condition and carcass, one is ready to admit that there is no longer much occasion to select the hog as an object of premium, much less as an animal to be amended by importation. We have ourselves imported and had sent to us, again and again, from old England and New England, the best of the various breeds, and yet no one of them was adapted to all the various parts of our country, and to the very different modes of feeding and fattening, cooking and using them.

How would the obese, short-legged, lazy grunter of New-England get along in the South, running for his living from one acorn or persimmon-tree to another, as many miles in a day as a mail-carrier, leading, like a poor editor, an ever-anxious and precarious existence, living on roots and nuts, as he can find them, and without which good *bacon* is not to be expected?

We saw in the streets of Washington, a few days since, a black sow that would net about 150 pounds, that for good-sized, well-proportioned head, square frame, round body, large ham and bone of middling size, we would as soon take to breed from as any hog that could be imported from the piggeries of the Dukes of Woburn or Essex, in England.

But the pigs that embellish, if it be an embellishment, this number, may be pronounced a true likeness of one, nicely dressed and exhibited, about the "ides of March" last, in the hall or entry of the National Hotel at Washington. Those who saw *that* pig, will at once recognise the resemblance. This little-boned, short-legged race, would appear to suit our Yankee friends; to make what they call "pickled pork," which the southern traveller finds, baked with beans, and so nicely served up at the genteel, quiet, charming and luxurious table of the Tremont House, so well kept by Mr. Tucker, in Boston. But we confess to thinking it even nicer still when it seasons a

dish of lady-pea soup! one of the most palatable dishes to be met with "in a month of Sundays."

The specimen of this breed, to which we have referred as having graced the larder of the National Hotel, was as fat as any opossum that ever was shook from the persimmon tree by old King CYRUS, or Hanover, or any other one of the old family servants in the South, God bless them, who, if you observe them, you may so often see

"of a shiny night,
At the season o' the year"

when grapes and persimmons are ripe, throw an axe in the bend of the left elbow, and with a sly whistle to an old half-hound coon dog, steal off quietly in quest of game, that if it escape them, must be "as cunning as a fox." We speak from lively reminiscences of youthful participation and enjoyment of the sport, especially when it ended in a good hard fight with an old swamp-bred coon; than which no animal on earth or *in the water* makes a more gallant defence of his life. But to return to our *Middlesex pigs*.

Here is an account of three of this breed which lately took the premium of a silver medal at Smithfield, London, as the best pigs in class 18. Their breeder, Mr. W. Mills Barker, took for them also the gold medal for the *best pigs in the show*.

The American swine-breeder may be gratified with a view of the particulars, and they may serve as a standard of comparison for those to which premiums are awarded by our Societies.

"These pigs were farrowed on the 18th June, 1848, and were fed, from five weeks' old, on middlings, boiled potatoes, and peas up to eleven weeks old, when they had barley and pea-meal, and boiled potatoes, mixed with water. They consumed, in thirteen weeks, twenty-eight bushels of meal and four bushels of potatoes. They were tried on milk, but did not thrive so well on it as on water. In consequence of their great propensity to fatten, they were blind with fat at sixteen weeks old, and when exhibited their eyes were buried two inches in fat, which came over their forehead, and lay on the top of their noses full three inches.

"The following is a statement of the weight and age of the three while fattening:—

Stones weight of each (8 lbs. to the stone).

Date.	Weeks Old.	First.	Second.	Third.
July 23,	5	3	3	2½
August 13,	8	6½	5½	5
September 3,	11	10	9	8
Ditto 24,	14	13	12	11
October 51,	17	19	18	17
November 5,	20	25	24	24
Ditto 26,	23	29	28	28
December 6,	24 and 3 days	29*	28	28

"This breed of pigs has been very much improved by Mr. Barker (the exhibitor) in the last seven years. They are of a pure white colour, of great substance and propensity to fatten. They keep in excellent condition while stored on grass, turnips, offal from the barns or garden; and when put up to fat in two or three weeks make excellent porkers. They are fine in the bone and head; small upright ears, which point a little forward. They are of a small size, have good litters, varying from seven to fourteen in number, being very fat while sucking, and thus making very good roasters."

The reader will not fail to note the proof of early maturity to be seen in the fact, that all of them ceased to grow a single pound after the 23d week, when they were not quite six months old.

* 232 pounds at near six months.

ALDERNEY OR JERSEY CATTLE.

FAMILIAR as we have been made, by more than thirty years of perusal of the writings and observations of judicious men, at home and abroad, in respect to the qualities and the improvements which have been made in the various races of domestic animals, and difficult as it would be, therefore, to find anything, in what *has* been written, new for ourselves, we are not to forget that our office is to cater for *young farmers*, just coming on the stage, and laudably anxious, as we would fain hope all young farmers are, for useful information, and not the less useful (whatever indolence and ignorance may suggest to the contrary) for having been committed to paper and printed in a book, and therefore constituting, what fools only deride "*book knowledge*."

Hence it is, that in the forthcoming volume, which opens with the next number of "*The Plough, the Loom, and the Anvil*," we engage to give the most reliable information, in regard to the form and properties of the various races of animals known in foreign countries, with brief historical notices of the introduction of such as have been imported into this country—as, for instance, O'Donnell's, Patterson's, Gough's, Parkinson's, Spriggs's, Creighton's, Skinner's, and others, into Maryland; the Holstein, Alderney, Irish, Dutch, Flemish, Brittany, polled and short-horn breeds, brought into Pennsylvania by Messrs. Sims, Cunningham, Ross, Waln, Hamilton, Ketland, Guest, Massey, and Wurtz; the cattle imported into New York by Col. Deveau and Mr. Heaton, General Van Ransselaar, Mr. Vail, Mr. Corning, Mr. Prentice and others; the Leicester, Lancashire, short-horn and Hereford, taken to Connecticut, Kentucky, Massachusetts, New Jersey and Main by Messrs. Wadsworth, Stewart, Edgar, Vaughan, Sanders, Clay, and others. For the present, we shall send to the printer some items at hand that relate to the *Alderneys*.

To them our attention happens to be attracted at the moment by observing in the "*Mark Lane Express*," of the 15th of April, that at a late meeting of the Royal Agricultural Society,

"Colonel Le Couteur, Aide-de-Camp to the Queen and Viscount of the island of Jersey, presented to the Council lithographic impressions from two beautiful drawings, made by himself, of a bull and a cow of the Jersey breed, on which were marked the "scale of points," approved by the Royal Agricultural Society of Jersey at their general annual meeting in January last, as constituting perfection in their peculiar and well-known breed of dairy cattle, and as furnishing to their judges a simple and definite process for arriving at satisfactory conclusions in making their awards. Col. Le Couteur entered into a detailed and very interesting statement of the character of animals in which any one or more points specified in this scale were more than usually developed. The drawings then laid before the Council were not portraits of any particular bull or cow of the Jersey breed, but represented an ideal assemblage of individual excellences occurring in different animals, and selected from the finest cattle on the island, collected together at Col. Le Couteur's farm for the express purpose in view, and carefully submitted to the inspection and comparison of the gentlemen who formed the special committee appointed by the Jersey Society to revise the 'points' of their stock. Col. Le Couteur, in detailing the points thus agreed to by the committee, called the particular attention of the Council to some of those points found to be most intimately connected with the natural excellence of the animals and the characteristic peculiarities of the Jersey breed, of which the island in Col. Le Couteur's opinion, at that time contained some of as perfect specimens as could well be conceived. He remarked that the cows which had the inside of the ear tinged with a deep yellow colour were invariably found to yield butter of a rich orange colour, while those with ears of a lighter tint furnished butter of a correspondingly inferior quality, and of a paler hue. In the finest stock, too, the eye of the cow was soft and placid, while that of the bull was lively and full of fire. The 'action' of Jersey cattle also indicated, not only their muscular power and their mode of employing it, but that general conformation and adaptation of parts which constituted excellence: a finely

bred Jersey animal, Col. Le Couteur remarked, ought to walk off the ground like a race-horse. By means of this determination of a standard scale of points, the labour and responsibility of the judges were much reduced, while their decisions almost invariably gave satisfaction; as, in the case of any difference of opinion, a third party being called in, the award was at once decided. During the ten years that he had acted as secretary to the Royal Jersey Agricultural Society, he had never known the occurrence of an absolute case of dissatisfaction. Colonel Le Couteur, in reply to further inquiries, admitted that, at the present time, many animals were easily passed off as of the true Jersey breed, especially those of black, or black and white colour, from Normandy, and others from Brittany, which were very inferior, as dairy stock, to the genuine animals of that breed. The chairman wished to know how the term 'Alderney' had been generally applied in England to the Channel Islands' cattle, and whether the animals of that island possessed advantages over those of Jersey or Guernsey. Colonel Le Couteur said that, on the contrary, there was at the present time scarcely an animal in Alderney that he would think worth purchasing. He explained that that island had belonged to his great grandfather, who introduced into it a great number of the Jersey cattle, which, however, from the inferiority of the pasture, soon deteriorated from the original stock. Colonel Le Couteur, Mr. Parkins, and Mr. French Burke then cited particular instances of the great amount of butter yielded by dairy cows, during the flush of grass in May and June, or throughout the year, if fed in a particular way, and tended with great care, namely, 16lbs. a weeks in those months, or 11lb. a day in other cases during the year. Colonel Le Couteur then expressed the great pleasure it would at all times give to himself, as one of the Governors of the Royal Agricultural Society of England (or to his successor in the office of Secretary to the Royal Agricultural Society of Jersey), to receive applications from any of its members who require advice and aid in obtaining the best dairy animals which that island could produce. He had last year the satisfaction of freighting a vessel with thirty-three head of such stock, to a gentleman residing in Scotland, which arrived in perfect safety, and maintained the high character of the Jersey breed. The chairman referred to a challenge given by Mr. Villebois, one of the governors of the society, to the county of Bucks, in which he resided, in favour of two of his dairy cows of the Channel Islands' breed, which had produced him both milk and butter of almost unexampled quantity and quality."

All who are familiar with such portions of English agricultural annuals as treat of Cattle, must be aware of Colonel Le Couteur's high character as an agriculturist, and that his liberality corresponds with his knowledge. In respect of the race of Cattle in question, for practical knowledge and authority he may be considered, as to them, what Collins was in reference to the short-horns, and Bakewell to the Dishley sheep.

It was by Col. Le Couteur, whose obliging agency was procured through General Devereux, that the last cow imported by Mr. R. S. Colt, Esq., of Paterson, was selected. We saw her when she was landed, and regarded her as decidedly the best-looking animal of the breed we had ever seen, and we once owned some of the best which had at that time been brought into Maryland. In no breed of animals has the form been more improved than in this, as may be seen by contrasting specimens of the old and the modern form, as illustrated by diagrams in the first volume of the Plough, the Loom, and the Anvil.

Within a few days we derived, by letter, some particulars as to the growth and promise of Mr. Colt's herd, (probably the most numerous and best selected now in the country), which would have interested the reader, but the letter, we regret to say, has been mislaid for the moment. The cost and charges of the cow lately selected and sent out by Col. Le Couteur was, if we rightly remember, \$160. The great obstacle, by the by, to the repeated importations which are indispensable to maintain the excellence of improved breeds of animals, consists in the inability or unwillingness of American breeders to give remunerating prices for their progeny.

It sometimes gratifies curiosity at least, to look back and see what one has been doing in his own humble way to promote certain industrial interests. Happy for those, if any, whose retrospects present no subjects for contrition! Just thirty years gone by, on this very subject, did the Editor of the Plough,

the Loom, and the Anvil, thus discourse to some thousand readers, in the old American Farmer, that being the first, and then the only agricultural journal in existence in the United States:—

"Among the various subjects discussed in this journal, we perceive with regret that the importance of paying more attention to the improvement of *milch cows*, has not been sufficiently insisted upon—for, in the various breeds of cattle, there is as much difference as in the several breeds of horses, dogs, or any other animal. The hound and the spaniel differ little more in form and constitutional habits, and propensities, than did the PENNSYLVANIA OX, and the MARYLAND HEIFER, lately killed in this market.

"From this inattention to breed, we often see that half a dozen of the bad milkers, with which our farms are overstocked, positively yield less than *one good cow*, whose propensities are *to the pail*, in whom nature converts all her aliment into milk. But this is not all; for no fact is better established than that the milk of one breed of cattle will yield double as much *butter* as that of another—both being fed and treated in precisely the same manner.

"So well is the choice of blood understood in England, that the famous breeder, Mr. Bakewell, hires his bulls for from five to thirty guineas each, for the season, *according to their form*; and his bull Twopenny covered at five guineas each cow.—His stock is preferred for the butcher, because of its propensity to fatten quickly, and from its carrying its weight in the most valuable parts of the body*—but for *richness of milk and proportionate quantity of butter*, none, it is said, can be compared with the ALDERNEY Cow. Having heard and read of the extraordinary richness of the Alderney's milk, a few days since we improved an opportunity which was very politely offered us, to judge *for ourselves*—we saw the Alderney and other cows milked†—examined and compared each at different periods after milking; and we are firmly persuaded that the Alderney milk taken in the morning and divested of the cream at 2 P. M. is then richer than the milk of the common cow, when first drawn—it may be distinguished in the pail or the dairy, with half an eye, by its rich *yellow colour*, which passes through the cream and displays itself in the butter. The most transient observation of their superiority, in regard to the quality of their milk, must serve to convince those who keep a single cow for family use, as well as those whose pride is to sell the best butter in the market, that no time should be lost in providing themselves with this invaluable breed of cattle."

In 1819, Reuben Haines thus speaks of an Alderney cow, imported by M. and W. Wurtz in 1815:—

"She is now five years and eight months old, and has had the following calves:—1st, a bull, 12th month, 15th, 1815, during her passage from England—2d, a heifer, 12th month, 3d, 1816—3d, a bull, 11th month 13th, 1817, and 4th, a heifer, 9th month 25th, 1818. All of which are in my possession, and likely to do well, and I hope will tend to improve the quality of the butter sent to our market, already justly celebrated.

"On the 17th of 10th month, 3 weeks after the last calving, we churned 10½ quarts of cream, collected from one week's milk, which produced 8¾ pounds of the richest and yellowest butter I ever saw; and yesterday, at the end of 16 weeks, upon winter food (brewer's grains and hay, with about one quart of Indian meal daily) we obtained 7¾ pounds from a week's gathering, of which the following is a detailed statement:—

* While the Bakewell sheep hold their ground, under the names Bakewell, Leicester and Dishley, the Bakewell cattle have been superseded, justly, by the improved short-horn. The fault of the Bakewell cattle was laying their fat too exclusively on the external surface—nor did they come so early to maturity as the improved short-horn. General Ridgely had the Bakewell in perfection at HAMPTON, a seat rendered famous by its proprietor for enlarged and elegant hospitality.

† The place where this examination of milk was made was CLIFTON, the same to which Mr. Wirt refers in one of his letters, in Kennedy's life of Wirt. It was then under the excellent management of the late HENRY THOMPSON, who was a great favourite with Mr. Wirt, as he was with all who had the taste to appreciate his fine sense, his cordial and unaffected hospitality, and other high and gentlemanlike qualities.

"It is not to say what will bring to the mind
The joys that are fled and the friends left behind."

The few who survive to cherish fond reminiscences of the place and its owner—the good cheer and the lively joke with which we were wont to beguile there many a summer's afternoon, will be glad to know that this beautiful seat has fallen into the hands of a gentleman whose disposition is in full correspondence with his ample means to embellish and improve it.

1819, 1st month,	9th,	evening,	4 quarts	1 half pint.
"	10th,	morning,	5 do.	1 do.
"	do	evening,	4 do.	1 do.
"	11th,	morning,	5 do.	2 do.
"	do.	evening,	4 do.	2 do.
"	12th,	morning,	5 do.	2 do.
"	do.	evening,	4 do.	2 do.
"	13th,	morning,	6 do.	
"	do.	evening,	4 do.	1 do.
"	14th,	morning,	5 do.	1 do.
"	do.	evening,	5 do.	
"	15th,	morning,	5 do.	1 do.
"	do.	evening,	4 do.	
"	16th,	morning,	4 do.	1 do.

Total, 67 quarts, 3 half pints of milk, yielded 8 quarts, 1 pint of cream, which made $7\frac{1}{2}$ lbs. full weight of butter, the quality of which the members will have an opportunity of judging at the annual dinner of the Society this afternoon.

Very respectfully,

REUBEN HAINES.

RICHARD PETERS, *President &c., Philadelphia, 1st mo. 19th, 1819.*

Four years after he gives the following account of one of her calves :—

"I have now a full-bred Alderney cow, reared on my farm, that will be only four years old next harvest. She had her third calf on the first of last month, and on the nineteenth we made rather more than ten pounds of delicious butter from twelve quarts of her cream, obtained from fourteen milkings, that is, in one week. Her only food through the winter has been good hay and brewer's grains; the latter article well known to be useful in promoting the secretion of milk, but not increasing the quantity or improving the quality of butter. One remarkable property of the cream of the Alderney cow is the readiness with which it is converted into butter. The week in which we kept it separate, 'it came,' as the phrase is, in five minutes."

A NEW AND IMPORTANT RESOURCE OF NATIONAL INDUSTRY AND INDEPENDENCE.—AMERICAN STEEL.

THE United States have until a late period been entirely dependent on the iron mines of Northern Europe and the enterprise of English manufacturers, for every pound of cast steel which has been used within their limits.

The peculiar varieties of iron ore required for the manufacture of steel have hitherto been supposed to be found only in Northern Europe and India. From the former the iron is imported into England in the state of bar or malleable iron. A greater portion of it is there mixed with their own iron, which is inferior, and converted into steel, the quality of which is, of course, inferior to that produced solely from the imported iron. They in this way manage to make about five times as much *Swedish and Russian steel* as they had Swedish or Russian iron wherewith to make it.

It was for a long time supposed that there was no ore in this country suitable for the manufacture of steel, but the successful operations of the *Adirondac Iron and Steel Companies* for the last year or two, clearly show that they have ores which are every way suitable for the manufacture of a steel, pronounced, by some of the best judges in the country, to be *equal, if not superior*, to the best steel produced in England from any iron. These ores, too, exist in such immense bodies that they are more than sufficient to supply the whole United States for centuries to come, with a better article of steel than they now have. Nor is this superiority in quality owing to the method of converting the iron into steel, but rests entirely on the superior and peculiar quality of the ores of which the iron is made.

These ores are found in Essex county, New York, in the very heart of the

Adirondac Mountains, about forty miles west of Crown Point on Lake Champlain: there the enterprising proprietors, Archibald McIntyre, of Albany, Archibald Robertson, of Philadelphia, and the late David Henderson, of Jersey City, now own about one hundred thousand acres of land, all heavily timbered, and possessing unparalleled mineral resources.

The deposits of ore are all of the varieties of the "Black Magnetic Oxide of Iron," and are not exceeded in magnitude by any other known deposits. The predominant rock, and that in which the ore is contained, is the "Hypersthene Rock," so called from the Hypersthene, of which it is principally composed, associated with large quantities of Labrador and common felspar, &c. For a particular description of the extent and quality of the ore, see Professor Emmons's Report on it in the Reports of the Natural History of New York, part 4, page 244, &c.

Contiguous to the Works are beds of limestone, common and fine clays, sand, veins of quartz, &c.; furnishing ample supply of these minerals. The works are erected on a water power of unlimited extent, and are surrounded by a dense and almost unbroken forest in every direction, which the company have secured for the purpose of supplying wood for charcoal. Indeed, nature has here brought in immediate contact and in unlimited quantities, ore, flux, fuel, motive power, fire and building material, &c.; everything that is necessary for the manufacture of iron on the largest scale.

The present works consist of blast and puddling furnaces, with all the necessary buildings, machinery, &c. A blast-furnace is now being erected, of large capacity, to meet the increasing demands for steel.

The Steel Works are situated in Jersey City, N. J., and were erected under the superintendence of Joseph Dixon, Esq., who has already gained for himself a high reputation amongst the first inventors of this country. The outlay on these works has been very great; but the company, composed of the proprietors of the Iron Works associated with Dudley S. Gregory, of Jersey City, have spared no expense to render them as complete as possible.

The numerous difficulties incident to the commencement of a manufacture both new and unknown in this country, have been by them met and overcome. So that they are now in successful operation, producing a cast steel of acknowledged superiority.

Nor is it necessary with their iron, as with the European, that it should be first brought into the malleable state before its conversion into steel, as they have succeeded in producing an article direct from the pig metal, of a quality equal, if not superior, to their other steel, which, when carried out, will produce a great saving in the expense of manufacture.

From the above views of this property, and the magnificent undertakings, we cannot but believe that it will eventually become of great national importance, and certainly deserves the patronage and hearty co-operation of every American—not only by all the countenance and preference that individuals can give, but by such legislation, in reference to this important element of national industry, not to say independence, as would secure it from being depressed by the poor and ill requited labour of European operatives—leaving in that case unused in the bowels of our mountains, rich deposits, placed there by a gracious Providence to be used, and used under a system of legislation that shall give fair play to labour, making of our government, for the masses, under our glorious constitution, a *practical* instead of a *theoretical* blessing.

We might say more about *steel*, its composition, &c., but we are already accused of a leaning towards manufacturers; while nobody doubts their usefulness to the farmer—to whom in fact, but to them, and to those who are not farmers, can he look as his customers? The question with the American

farmer is, whether these customers shall be far away, and so poor as to be unable to consume his products if he could get at them, or whether they shall be prosperous, here, close and thick around him in his own country. Our view is that of Mr. Jefferson in 1816, when he said to Mr. Austin—"It is time to place the manufacturer by the side of the Agriculturist." Does the support we get from manufacturers look like partiality on either side? Look at Pittsburgh—not a dozen subscribers.

We believe it was for a specimen of this American steel, that the first one of the CRESSON PREMIUMS was awarded by the Franklin Institute—we have much pleasure in recording the following conclusive testimony as to its quality, the excellence of which further and ample trial, has placed beyond all question.

PHILADELPHIA, May 1st, 1849.

DEAR SIR—It affords me great pleasure to say, that on a fair experiment with the American steel made at Jersey City by Messrs. Dixon & Co., the surgical instruments made therefrom possess as fine an edge and appearance as those manufactured from the best imported cast steel.

Respectfully yours,

PUGH MADEIRA,

Surgical Instrument maker,

37 South 8th St.

To A. ROBERTSON, Esq.

Following our propensity to hope and believe, that besides a mere knowledge that steel enters into the composition of various implements, the young farmer might be pleased to learn, in passing, something of its composition and characteristics, as distinguished from iron and other metals, we were going with the aid of our learned friend BRANDE, to gratify what ought to be esteemed a praiseworthy curiosity, but, on reflection, it might be objected to, as not enabling him to make one bushel more of potatoes, so we take leave only to recall a few lines of noble apostrophe to steel for its useful offices in Commerce, Agriculture, and War; hoping to be the more readily excused, as it is found in a *Botanical* work, by a great Philosopher, and, in our humble judgment, whatever may be said to the contrary, a great Poet.

Hail adamant Steel! magnetic Lord,
King of the prow, the *ploughshare*, and the sword!
True to the pole, by thee the pilot guides
His steady course amid the struggling tides!
Braves with broad sail th' immeasurable sea,
Cleaves the dark air, and asks no star but thee!

PRICES OF PROMINENT AGRICULTURAL STAPLES.

WE are at some loss to know whether our readers would not like to have the same space filled with other matter, looking to *newspapers* for prices. We would be glad, if possible, to hear their verdict.

Our standing authority for that great market is the "**NEW YORK DRY GOODS REPORTER.**" The last number of that first rate paper, in all its departments, received before we went to press, says:—

COTTON.—The sales of the week aggregate 17,000 bales, showing great activity; but not, as we can learn, for actual consumption. This large amount has changed hands, nearly altogether, on speculation.

The stock here is to-day 130,000 bales; a very large amount; and it shows the firmness of holders that it should be so large without a decline.

The accounts relative to the new crop are beginning to come in unfavourably, and if they continue will have a powerful influence in sustaining the market. This new element in the calculation will work out a new result. It will necessitate a much greater reduction of the consumption, and will occasion the closing of many mills.

The Lowell manufacturers, we perceive, calculate on being able to work at their reduced rate, until October, with their present stocks. Another year of short crop would benefit no party. No amount of price would compensate.

The market closed firmly at the following quotations; at which holders are offering freely:—

	Atlantic ports.	Gulf ports.
Inferior	none,	none.
Ordinary low to good	11 $\frac{5}{8}$ a 21 $\frac{1}{8}$	11 $\frac{1}{2}$ a 12 $\frac{1}{8}$
Middling low to good	12 $\frac{1}{4}$ a 12 $\frac{5}{8}$	12 $\frac{1}{4}$ a 12 $\frac{7}{8}$
Middling fair to fair	12 $\frac{3}{4}$ a 13 $\frac{1}{8}$	13 $\frac{1}{4}$ a 13 $\frac{3}{4}$
Fully fair to good fair	13 $\frac{1}{4}$ a 12 $\frac{3}{4}$	— a 14
Good and fine	none,	none.

FLOUR.—Duty: 20 per cent. ad val.

There is rather more buoyancy in the market since the arrival of the *Hibernia's* advices, and the rapid advance in domestic. The sales of this description reach 1850 bbls. bonded at \$1 75 a \$1 81 $\frac{1}{4}$ for mixed brands; and 1100 bbls. free *Sour* at \$5. The stock in bond is about 31,000 bbls. The sales of domestic aggregate, 38,500 bbls. at \$4 37 $\frac{1}{2}$ a \$4 50 for fine; \$4 62 $\frac{1}{2}$ a \$4 81 $\frac{1}{4}$ for No. 2 superfine; \$5 18 $\frac{1}{4}$ a \$5 37 $\frac{1}{2}$.

GRAIN.—Duty: 20 per cent. ad val.

Our advices from the interior of the State confirm us in the belief that the stock of Wheat is only sufficient for the wants of the local consumption up to the next harvest, rendering it certain that the receipts at tidewater will be far below the wants of the trade.

Our quotations as corrected stand thus:—

Wheat, White Genesee	per bush.	1 35	a 1 37 $\frac{1}{2}$
do. Canada, (in bond)		1 02	a 1 12
do. Ohio		1 00	a 1 14
do. Red and Mixed W.		90	a 1 10
do. Southern		1 00	a 1 22
Rye, Northern		59 $\frac{1}{2}$	a —
Corn, round Yellow		62 $\frac{1}{2}$	a 64
do. do. White		63	a —
do. Southern, White		62	a 62 $\frac{1}{2}$
do. Southern, Yellow		64	a —
do. Western, Mixed		62	a 62 $\frac{1}{2}$
Barley, Western		63	a 65
Oats, Northern		45	a 46 $\frac{1}{2}$
do. Jersey		42	a 43 $\frac{1}{2}$
do. Southern		32	a 37
Peas, Black-Eyed	per 2 bush.	1 75	a —
White Peas		70	a 75
do. Beans, Southern		1 25	a 1 44
do. do Northern		1 44	a 1 75
Canadian Peas		60	a 65

GUANO.—We notice a sale of 25 tons Peruvian at \$47.

HEMP.—Duty: Russia and Italian, 30 per cent. ad val.

Manilla, Jute, and Sisal, 25 per cent.

The market for nearly all kinds continues inactive at nominal prices. Kentucky and Missouri dew-rotted hemp is freely arriving; the stock at present is about 9000 bales, and from advices received will probably reach very shortly to 12,000 bales; shipments eastward have, however, ceased, in consequence of the low prices. Many of the hemp farmers, both in Missouri and Kentucky, had been anxious to realize *in order to start for California*; the emigration from those two States, of farmers, including hemp growers, having been very considerable this spring. We hear of some small sales of dew-rotted at \$1 20 to \$1 25, and of Manilla several hundred bales at 9 $\frac{1}{2}$ c.; Russian is held firmly at \$2 20 a \$2 25, with a stock of about 250 tons.

HAY.—The demand for shipping has been moderate; the receipts have been considerable, and at easier prices; some 1200 bales sold at 58 a 62 $\frac{1}{2}$ c.

IRON.—Duty: 30 per cent. ad val.

The market has again slightly declined. We have to record sales of 200 tons English bar at 35 50, 6 months, which is a decline of 50c.; a small invoice of Swedish at \$80, from ship; 30 tons Gartsberry Scotch Pig at \$19 50. The foreign advices by the *Hibernia* are again unfavourable, as from the extract which follows of the London market.

Our quotations here are :—

Pig, Scotch, per ton	\$19 50 a	\$20 00
Bar, English, refined	45 00 a	55 00
do. do. common	35 50 a	36 00
Sheets, do.	3 a	4½
Swedish	80 00 a	85 00
English Hoop	55 00 a	60 60

London market, per Hibernia, May 3: Although Pig Iron can be had at lower rates the demand is unimproved, and production does not diminish. Sales to a limited extent have been made in Scotch at 42 to 42s 6d for mixed, and at 43 to 43s 6d for No. 1. Rails are offered at £4 15s to £4 17s 6d, and few buyers are to be met with. Only limited sales have been made in foreign iron at low rates.

PROVISIONS.—Duty: Cheese 30 per cent.; all others, 20 per cent. ad val.

Since our last there has been a fair demand for Pork for the trade, with a large speculative movement at the close, causing prices to rapidly advance. This activity has been induced by the falling off in the receipts at the different ports on the Lakes, as compared with last year. The present prices current are still below the actual cost, which induces greater firmness on the part of large holders. Prime mess has ruled dull; the demand for export has greatly fallen off, as compared with former years, owing in part to the bad repute in which it is held in the English market, the most of it here is quite unfit for that market. Some considerable parcels have been taken for the California market, not sufficient, however, to relieve this market, and the sales making are at irregular prices.

Butter and Cheese have arrived freely, and are dull at our revised quotations.

Our revised quotations are as follows :—

Beef, Prime, Co. & City	per bbl.	\$5 25 a	6 12½
Pork, Mess, Ohio, new	10 62½ a	—	—
Pork, Prime, Ohio, new	8 75 a	—	—
Pork, Prime, Mess	10 00 a	10 12½	—
Lard, Ohio, Prime, in bbls	6½ a	7	—
Butter, State, inferior	7 a	10	—
Butter, State, fair to good	13 a	17	—
Butter, State, prime and choice	17 a	25	—
Butter, Ohio	7 a	12	—
Cheese	5½ a	7½	—

TOBACCO.—Duty: Leaf and Unmanufactured, 30; manufactured 40 per cent. ad val.

The market is dull; holders are firm beyond buyers' views. The small stock and impossibility of replacing it at current prices induce this firmness on the part of holders. From Liverpool, May 3, we learn by the Hibernia that the stock on hand on the 30th of April was 14,123 hhds. against 13,831 in the year preceding, and in London the stock was 24,270 hhds. and tierces of American, against 23,451 in 1849. Prices were firm with limited sales, not being over 700 hhds. in all the month of April. The most active demand was in Kentucky leaf and strips; the sales were 140 hhds. leaf and 400 strips at full previous prices.

WOOL (FOREIGN).—The demand has been better than ordinary in this month, and prices are well sustained. We quote sales of 140 bales Buenos Ayres, washed, at 16 a 17 cents; 100 bales washed Mazagan at about 29 cents; 40 bales unwashed Smyrna at 14 cents; and sales of Entre Rios at 20 a 22 cents; also some transactions in Peruvian at 30 cents.

WOOL (DOMESTIC).—The stock in market has been comparatively bare of Fleece wool for the past three weeks, consequently the operations have been limited. We hear, however, of sales of 25,000 lbs. at 24½ a 26 cts. or a reduction of 3 cts. per lb. from prices paid at the sale of Messrs. Coghill & Co.

In Pulled Wools there has been more activity, and several parcels have gone into consumption, 36 a 39 cts. for super, and 33 cts. for country pulled (Watertown), and 31 cts. for super, and 28 a 30 cts. for No. 1 city pulled.

Should the clip be delayed much beyond the usual time, the small quantity of Wool in the eastern cities will all be closed at present rates.

PRICES OF AMERICAN FLOUR IN ENGLAND.

THE effects of free trade in that country, is described in the May number of the "*Farmer's Magazine of London*." We wish we had room for the whole article. The editor says: "The more rational of the free traders have long since discovered that to lower the value of agricultural produce in this country below the cost of production, by importations of foreign corn, is not likely to be so advantageous to themselves as they at one period anticipated. They have already found out, that the falling off in the home demand for manufactures, in consequence of the altered position of our farmers, has lessened their trade, and curtailed their profits far more than it has increased an export demand. A change is therefore gradually taking place in public opinion, which would certainly manifest itself plainly in case of a general election. Meanwhile, her majesty's ministers seem determined to stick to their places as long as possible, and farmers need look for no relief from the present government."

After quoting the last accounts of New York prices for flour, the editor says: "It is considerably higher than at Mark Lane; and it would almost pay to ship the article from Liverpool to New York!"

He then gives the imperial averages for the last six weeks in England, prior to the 1st of May, 1850.

	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
WEEK ENDING	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
March 16, 1850,	38	1	23	8	14	11	22	7	24	1	25	2
March 23, 1850,	37	8	23	4	13	2	23	5	23	11	25	2
March 30, 1850,	37	9	23	6	15	2	21	7	23	10	25	3
April 6, 1850,	38	1	23	2	14	10	21	6	23	8	24	5
April 13, 1850,	38	5	22	11	15	3	20	8	23	9	26	3
April 20, 1850,	37	10	22	8	15	3	21	6	23	2	24	9
Aggregate average of last six weeks,	38	0	23	2	15	1	21	11	23	10	25	2
Comparative average same time last year,	44	6	28	9	16	10	24	5	28	10	30	7
Duties,	1	0	1	0	1	0	1	0	1	0	1	0

Now, as has been the effect of free trade in England, so is the effect of the diminution of the duties since 1846 in this country. It not only diminishes the power to consume, by persons engaged in the iron, the coal, the cotton, and the woollen business, but it drives the labour employed in them to the plough—making rivals in place of consumers—yet for teaching this truth, and illustrating it in a thousand ways, here is one of our rewards.

"COLUMBIA, S. C. May 15, 1850.

"TO J. S. SKINNER.

"DEAR SIR—A few days since I paid Edwin A. Evans, assistant for J. E. James, six dollars for my subscription to "*The Plough, the Loom, and the Anvil*," up to June 1850. I will now thank you to discontinue it. Yours respectfully."

This is from Mr. J. C. S., a gentleman of ample fortune and the highest respectability. Yet, in England, the great champion of free trade, for coaching and speaking and feasting about the country, was rewarded with \$350,000 in one lump! while we are left to struggle for life, with difficulty to keep our chin above water. So the world goes!

Here is what a *London* paper says of the principles we are maintaining:—

"If Gen. Taylor shall succeed in carrying out his views, he will be the greatest man that America has yet produced, and the magnificent benefactor of his country. The Americans have coal, iron, timber, and can raise sufficient cotton for the world. They have exhaustless supplies of corn and provisions, cheap and fertile lands, and they have no taxes worth mentioning. Why, then, should they not manufacture for themselves? Why should cotton be brought four thousand miles to England, to be spun and woven in Lancashire, and be carried some three or four thousand miles more to the United States to be consumed? We cannot see any reason for it. It is true, that England has had the start in manufactures, but what right has she to expect to be always first in the race? The Americans are not only justified in protecting their own interests, but, as the President says, 'It is the right and duty of Congress to encourage domestic industry, which is the great source of national wealth and prosperity.' Sounder policy was never broached; truer words never uttered."

If, in our country, the party ruling in Congress now, could only see with the sagacity that is supposed to characterize successful politicians, they would take the wind out of

the sails of their adversaries, by securing protection to American labour. They would admit, with General Jackson, that "we have been too long subject to the policy of British merchants." The party that does that, whatever may be its name, will finally triumph, whatever may be the ups and downs of parties in the mean time. That is the party that must ultimately come into the permanent enjoyment of power, for it will be in fact and in truth the people's party, and they would let such a party, in all things else, do pretty much what it pleased.

WOOL HUSBANDRY IN VIRGINIA—CONFIRMATION OF ALL THAT COL. RANDALL HAS SAID ON THE SUBJECT—THE SUPERIORITY OF HIS WORK ATTESTED BY A FIRST-RATE JUDGE.

To J. S. SKINNER, Esq., *Editor of the Plough, the Loom, and the Anvil.*

DEAR SIR:—I enclose you an exceedingly interesting letter from Mr. Allen, of Virginia, to Col. Long, of this city, which you may publish in your valuable journal. It was accompanied by some specimens of wool, which I will take the earliest opportunity of examining.

I am very respectfully yours,

P. A. BROWNE.

May 18th, 1850.

The following letter, as will be seen, was not written for the public eye, but whatever the writer may say to them, we are very much obliged to the friends, who think with us, that such lights should not be hid under a bushel.—ED. P. L. & A.

Mount Prospect, May 13th, 1850.

MY DEAR SIR:—Accept my cordial thanks for "Randall's Work on Sheep Husbandry in the South," until I can make you a more fit return. I prefer it to either Morrell's or Youatt's works on the same subject. As a friend has applied to me for some samples of the fine wool grown in this neighbourhood to send to some gentlemen in Rhode Island, I have divided the samples collected, and now send you one-half of them. I do this, because I discover from the March and May Nos. of the "Plough," &c., that you were kind enough to hand those specimens I gave you in 1848 to Mr. P. A. Browne, of your city. Those samples were taken from the fleeces after the sheep had been washed and sheared—these were drawn in accordance with the directions given by Mr. B. The specimens from *my flock* may not all be equal to those I gave you in 1848, as we drew them from the sheep most easily caught, and, I would add, from the largest and fattest sheep, judging from the quantity of oil in the wool. They are, perhaps, a good average of my flock. As you have specimens of Nos. 1, 3, and 6 for 1848, I now send you specimens from the same bucks for the years 1849–50. The two former washed and sheared—the latter drawn and unwashed. This will enable Mr. B. to ascertain whether there has been any deterioration in the wool. It would have been better if all had been drawn and unwashed. The Messrs. Patterson, of Bedford, are sons of Mr. J. Patterson, of Washington county, Pennsylvania, and their sheep are a part of his Pennsylvania flock of Saxons. Having been brought up to the business, they are quite conversant with all the details of sheep-husbandry, and the specimens of wool from their flocks are doubtless drawn from their finest woolled sheep. Mr. Kelso and myself purchased our sheep from Mr. J. Patterson, and as we limited him as to the price (say five dollars for the ewes), if there is much difference in the wool, it is owing mainly to the sheep and their management, and not to the soil, climate, or grasses. Indeed, I think this Piedmont country (commencing with Loudon and running to Patrick and further south), is the best region of country for the finest woolled sheep in Virginia, or perhaps in the United States. It has been nearly three years since I commenced the business without any experience, with 65 ewes, 50 lambs, and 194 wethers. These sheep have never been housed at any time, except when lambing; then the ewes and lambs are driven under cover at night. In the day-time the cover is an open shed, under which they may stay or not, as they please, though it would be best to confine them under the cover in a snow-storm or cold rain. The other sheep take the weather as it comes, without shelter of any kind. We have to feed but little in the winter, snow never covering the southern aspects longer than twenty four hours at a time, so that by getting our lands well-set and planted with grass (and all the natural and artificial grasses readily take and hold here) and retaining a part of our pasture for winter (and the orchard grass remains green most of the winter), our sheep could live well throughout the winter *without any grain, hay, or fodder*. Indeed, the coarse sheep of some of my neighbours now live all winter in my old fields. The *fine* sheep are healthier in large flocks than the *coarse* ones. Most of the diseases which afflict sheep elsewhere

(especially in England), are as yet unknown to us here. It is not as *hot* here in mid-summer as in Pennsylvania or Connecticut. The wool does not become coarser, but gradually gets more cotton or silk-like, and *I think* the fibre becomes larger, and that there is no diminution in *quantity*. Its other properties others must speak of who have the means of testing them. My land is elevated, say some 400 or 500 feet above the James River at Lynchburg. Indeed, so thoroughly convinced am I of the *superior and peculiar fitness* of the climate, soil and grasses of this country for the rearing of the *fine* woolled sheep, and that sheep-husbandry is the quickest and cheapest mode by which to restore the fertility of these once fertile lands, that, had I the means, I would soon have from 3000 to 5000 Saxon sheep, where I now have but about 500. I wish some of your millionaires would but just think of this and me when they are casting about for objects on which to squander their money, and deposite some \$15,000 or \$20,000 to my credit in one of our banks. Then I would soon prove to our people the value of this land and of sheep-husbandry. My clip of 1848 was sold to Mr. Lawrence, of Lowell—that of 1849 sent to the wool depot at Kinderhook, and highly spoken of at both places. As I discover that Messrs. Bennett, Mortin & Co. have a wool establishment in your place, I will show their circular to the Messrs. Patterson's, and perhaps we may send our wool of this year's clip to them, that the wool-growers of Pennsylvania, &c., may see that we can raise fine wool in Eastern Virginia. I write carelessly, and for you alone. You must excuse the trouble I have imposed on you to hand these samples, unhandled, &c., to Mr. Browne, and be assured that it will always afford me great pleasure to reciprocate acts of kindness. With respect to your lady and self, believe me, ever your friend, &c.,

ROBERT ALLEN.

For "The Plough, Loom, and Anvil."

CALENDAR OF OPERATIONS.

SPRING, with all her coquetry, is about taking her departure. The northern breezes will be succeeded by those of the balmy south. Flowers will succeed foliage, and by all present indications, Pomona will visit us fully loaded, to crown the labours of the husbandman and gardener.

The present season here is three weeks later than the average. The lilac—*syringa vulgaris*—is generally in full bloom about the first of May, whereas, this season they are at this date, 20th, in perfection. The vegetable garden is exceedingly backward; many of our neighbours, who are adepts in gardening, have just planted their Lima beans the third time, and we are on the eve of planting a four acre lot. Sow beets for a full winter supply any time this month; they will do after the early crop of peas or lettuce has come off the ground. The early horn carrot will also be in time. Sow tomatoes in the ground for a late supply; stake up those already planted to bring them a few days earlier. As soon as the fruit begins to change colour, cut off the vines, and thin out the leaves to allow the sun full power upon the fruit. Prepare ground for early celery; dig deep—manure well (three or four inches thick at least), and give plenty of water. Many use this element very sparingly, and yet waste thousands of gallons of the best dish washings, soapsuds, &c.; all run off in a drain, or slushed on the ground near the pump till it becomes a nuisance. I have every drop saved by a conduit from the pump trough into a cistern from whence it is drawn at pleasure, and proves a rich vegetable fertilizer for the vegetable crop. The stalks of rhubarb watered with it are ten inches in circumference. Celery and cabbage watered with it are no imitations. Stir up all the vegetable crops with the hoe; keep the ground free and friable; dig down old strawberry beds; manure the ground, and plant with cabbage, or sow snap-short beans for a late crop; place stakes or rods to tall late peas, and see that your running beans are tied to the poles till they hold and run for themselves; neatness and accuracy in every movement and business is the index of a good workman. Plant more sugar-corn, and continue to do so every few weeks, that it may always be young and tender for the table. Do not cut from your asparagus beds longer than three weeks; it weakens the plants for next. Sow yellow or white summer radish in any spare ground; sow a bed of cucumbers for pickling—any of the short cucumbers will do for the purpose, though the sort called *short green* is preferable.

The farmer, it is presumed, has got in all his corn crop, and his attention is more given to good cultivation and destruction of weeds. You see him early in the morning and late in the evening with an eye upon his enemies. We never step except with the hold of an implement: the plough, the cultivator, the hoe, the spade, or the weeding hook are familiar to us. The crows, and our neighbours' chickens in former sea-

sons, made love to our corn fields: this season we soaked our corn a few minutes in half gas tar and half water, and then mixed dry sand with it to separate the grains; by this process we have happily defeated our enemies. One half of our field is manured; the other half we will apply guano to about the first week in June. Whilst on the guano, allow me to call special attention to this convenient fertilizer. Last November, a tenant gave up to me a field that had been cultivated with several crops, such as potatoes, corn, and vegetables, which left the ground in a very unequal state; I, however, sowed the whole in wheat, at the rate of one and a quarter bushel to the acre. It came up very regularly, but, as some supposed, too thin; before Christmas, the growth showed, evidently, the state of the ground. Where the potatoes grew it was all that could be desired; the other portions were good, bad, worse. In the last week of March, I mixed genuine Peruvian guano with twice its bulk of half dry sand, and sowed it, before rain, over those parts that had not been cropped with potatoes, at the rate of two and a half cwt. to the acre; and over a portion that was very poor and yellow, we doubled the sowing so that it got about five cwt. to the acre. We have now the satisfaction of witnessing the field of one uniform appearance. The effect was almost instantaneous; the plants have tillered finely, and we have no doubt of reaping a very uniform crop. Genuine Peruvian guano will give an ash almost entirely soluble in acids, leaving only one and a half, or at most, two per cent. of sand, whilst the adulterated specimens contain from twenty-five to forty per cent. of insoluble matter. Even stones as large as pigeons' eggs are included in the wretched composition which we, in our verdancy, purchased at a heavy loss, and, for one season at least, was not an advocate of this admitted boon to the farmer on the Atlantic board. We are credibly informed that the genuine article cannot be sold for less than forty-five or forty-six dollars per ton of two thousand lbs.; and we know merchants of the very highest integrity, who have had consigned to them, and have sold an article of the most worthless description. The average weight of a bushel of pure Peruvian guano is about sixty-eight pounds, whilst the spurious far exceeds that weight, owing to the ingredient being clay or gravel used in its composition. On this subject a question may arise: Can the farmer refuse payment for adulterated guano, or can he recover from the dealer for loss of money and loss of crop?

MARYLAND AVERAGE CROPS.

As we expect no more returns, we will present in the July number, such views as are warranted by the few we have.

We placed, at our own expense, a printed tabular form, in the hands of a prominent agriculturist in every election district in Maryland, and with the Delegation from every county in Virginia and in Pennsylvania—from the former of the last two States we received *returns* from two counties, and from Pennsylvania *not one*. W. W. W. Bowie, Esq. promptly answered, and gave the averages for Prince Georges, Maryland, as follows:—

Wheat 8 bushels—*increase* per cent. in 20 years, 12; Indian corn 40, *increase* per cent. 10; oats, 20; buckwheat, 20; potatoes, 100; *increase* 20—turnips, 300; *increase* 80—tobacco 800 pounds; *decrease* 10—peas 20 bushels. Hay 3000 pounds per acre, *increase* per cent. in 20 years 5 per cent.; average milk per cow per day, while at the pail, 6 quarts. Wages per month, besides being found, for males, \$7; females, \$3; by the year, males, \$60; females, \$30. These are generally slaves, it is presumed. Meagre as are the returns from Maryland, they offer scope for interesting comment.

The result of this apparently well digested attempt, however, proves how vain would be the effort to accomplish for the agriculture of a country of almost unlimited extent, what is proposed by the bill in the Senate, with machinery and appliances so inadequate as that which it provides. Not a tenth part as much force or means, as are provided for either of the military schools. Perhaps, however, like them, it may grow from the smallest beginning into something worthy of the nation, if, like them, it can be kept uncontaminated by party influence.

MR. P. A. BROWNE'S RESEARCHES ON HAIR AND WOOL.

We regret that preoccupation of all the space at our command will prevent us from giving the Report of the Committee on Agriculture at Harrisburgh, which closes with the following:—

Your committee, therefore, recommend that the prayer of the memorialist be granted, and that the Governor of this Commonwealth be requested to aid in bringing before the public this valuable information, by subscribing for three hundred copies, which will enable Mr. B. to publish it, as he says, in the land of his birth.

TO OUR READERS AND CORRESPONDENTS.

☞ We authorize the friends of the Plough, the Loom, and the Anvil, to pledge us, that the next volume shall be improved over its predecessors, in full proportion to any accession of patronage.—The fact is, friends of American industry, we must have five hundred more subscribers for the third volume, and then we shall go smoothly on, with a taught sheet and a spanking breeze.

☞ Mr. B. of Mississippi, your request about the cost, &c., of putting a certain number of spindles in operation, is not forgotten, as you will see in the July number. We have referred it to a friend, whose means of information are reliable as are his own intelligence and good-will.

What is needed in the South, is plain, practical, and minute information, that would enable them to begin to use their materials and their water power on a small scale.

"Larger boats may venture more,
But little barks should keep near shore."

As poor Richard says.

☞ Among the subjects to which we shall pay early and earnest attention, is that of *plank roads*, so well adapted, as they begin to think, to agricultural uses in the southern States. Here too, what is needed, and what we shall endeavour to get, is such minute particulars as would enable a common carpenter to construct one. Their durability of course must depend greatly on the quality of the timber used, the climate, &c.

☞ We shall give a valuable prize essay, with cuts, on the preparation of *peat charcoal* and charcoal from *wood*.—The former, again, for the use of our readers in the East, where only the climate admits of the formation of peat. In southern latitudes more thorough putrefaction supervenes too rapidly.

☞ The Maryland Agricultural Committee. We had in type, with many other things which we were obliged to postpone, some remarks on the official doings, or omissions, of this committee. Right well do we know that such strictures are not calculated to get subscribers or to make friends: much easier and more agreeable would it be to "lay dark," or to flatter, painting all things *coulour de rose*; but, when a man has taken the bounty, is he not bound to fight on occasion?

☞ **COMPOUND INTEREST.**—The following simple rule will show the number of years in which a single sum will become double in amount, by the accumulation of compound interest, for all rates of interest not exceeding 10 per cent.: Divide seventy by the rate of interest per cent., and the quotient is the number of years required. Thus, 70 divided by ten will give 7 years; by five, 14 years; by four, nearly 18 years; by three, nearly 23 years; by two, 35 years.—*Newspaper paragraph.*

READINGS FOR MOTHERS AND CHILDREN.

THE CHILD AT PRAYER.

A few weeks since, in coming down the North River, I was seated in the cabin of the magnificent steamer, Isaac Newton, in conversation with some friends. It was becoming late in the evening, and one after another, seeking repose from the cares and toils of the day, made preparations to retire to their berths. Some pulling off their boots and coats, lay them down to rest; others, in the attempt to make it seem as much as possible like home, threw off more of their clothing; each one as his comfort or apprehension of danger dictated.

I had noticed on deck, a fine looking little boy of about six years old, following around a man evidently his father, whose appearance indicated him to be a foreigner, probably a German; a man of medium height and respectable dress. The child was unusually fair and fine looking, handsome featured, with an intelligent and affectionate expression of countenance, and from under his little German cap, fell his chestnut hair in thick, clustering, beautiful curls.

After walking about the cabin for a time, the father and son stopped within a few feet of where we were seated, and began

preparations for going to bed. I watched them: the father adjusted and arranged the bed the child was to occupy, which was an upper berth, while the little fellow was undressing himself. Having finished this, his father tied a handkerchief around his head, to protect his curls, which looked as if the sunlight from his young happy heart always rested there. This done, I looked for him to seek his resting place. But, instead of this, he quietly knelt down on the floor, put up his little hands together, so beautiful, child-like, and simple, and resting his arms on the lower berth against which he knelt, he began his vespers prayers.

The father sat down by his side and waited the conclusion. It was, for a child, a long prayer, but well understood. I could hear the murmuring of his sweet voice, but could not distinguish the words he spoke.—But what a scene! There were men around him, Christian men, retiring to rest without a prayer; or, if praying at all, a kind of mental desire for protection, without sufficient courage or piety to kneel down in a steamboat's cabin, and before strangers, acknowledge the goodness of God, or ask his protecting love.

This was the training of some pious mother! Where was she now? In a distant land, in her cold grave sleeping! How many times had her kind hand laid on those sunny locks, as she had taught him to lisp his prayers?

A beautiful sight it was, that child at prayer, in the midst of the busy and thoughtless throng. He alone, of all the worldly multitude, draws nigh to heaven. I thank the parental love that taught him to lisp his evening prayer, whether Papal or Protestant, whether far off or nigh. It did me good; it made me better.

I could scarce refrain from weeping then, nor can I now, as I see again that sweet child in the crowded tumult of a steamboat's cabin bending in devotion before his Maker.

But a little while before I saw a crowd of admiring listeners gather about a company of Italian singers in the upper saloon—a mother and two sons, with voice, and harp, and violin. But no one heeded, no one cared for the child at prayer.

When the little boy had finished his devotions he arose and kissed his father most affectionately, who put him into his berth to rest for the night. I felt a strong desire to speak to them, but deferred it till morning. When morning came, the confusion of landing prevented me from seeing them again.

But, if ever I meet him, in his happy youth, in his anxious manhood, in his declining years, I'll thank him for the influence and example of that night's devotion,

and bless the name of the mother that taught him to pray.

Scarcely any passing incident of my life ever made a deeper impression on my mind. I went to my room and thanked God that I had witnessed it, and for its influence on my heart. Who prays in a steamboat? Who train their children to pray, even at home?

A LITTLE ANECDOTE FOR LADIES.

We remember somewhere to have read a story of a youth, who, hesitating in his choice between two ladies, by both of whom he was beloved, was brought to a decision by means of a rose. It happened one day all three were wandering in a garden, that one of the girls, in her haste to pluck a new blown rose, wounded her finger with a thorn; it bled freely, and applying the petals of a white rose to the wound, she said, smiling, "I am a second Venus; I have died the white rose red." At that moment, they heard a scream; and fearing the other young lady, who loitered behind, had met with an accident, hastened back to assist her. The fair one's scream had been caused by no worse an accident than had befallen her companion. She had quite angrily thrown away the offending flower, and made so pertinacious and fretful a lamentation over her wounded finger, that the youth, after a reflection, resolved on a speedy union with the least handsome, but more amiable of the two young friends. Happy would it be for many a kind-hearted woman, did she know by what seeming trifles the affection of those whom she loves may be confirmed or alienated forever.

It once fell under our observation, that a very young and unsophisticated lady, without intending it, who was not excellent as a musician, bore off the palm from her young contemporaries, because when called upon, she would willingly, and without importunity, take her seat at the piano and do the best she could, saying, very frankly, that, though she was conscious of no extraordinary power to please, it would give her pleasure to do for her friends and the company the best she could to contribute to their amusement. She was very early married, and has ever since continued to act on the same principle of good sense, and genuine good manners, making friends without designing it, in every society of which she has been a member, and helping to counteract the less popular manners of her husband.

Thus, how true it is, that the rugged ways of life are made smooth by what Sterne calls "the small sweet courtesies of life," which, to some, seem to be natural, and which, by others, are neglected, or underrated.

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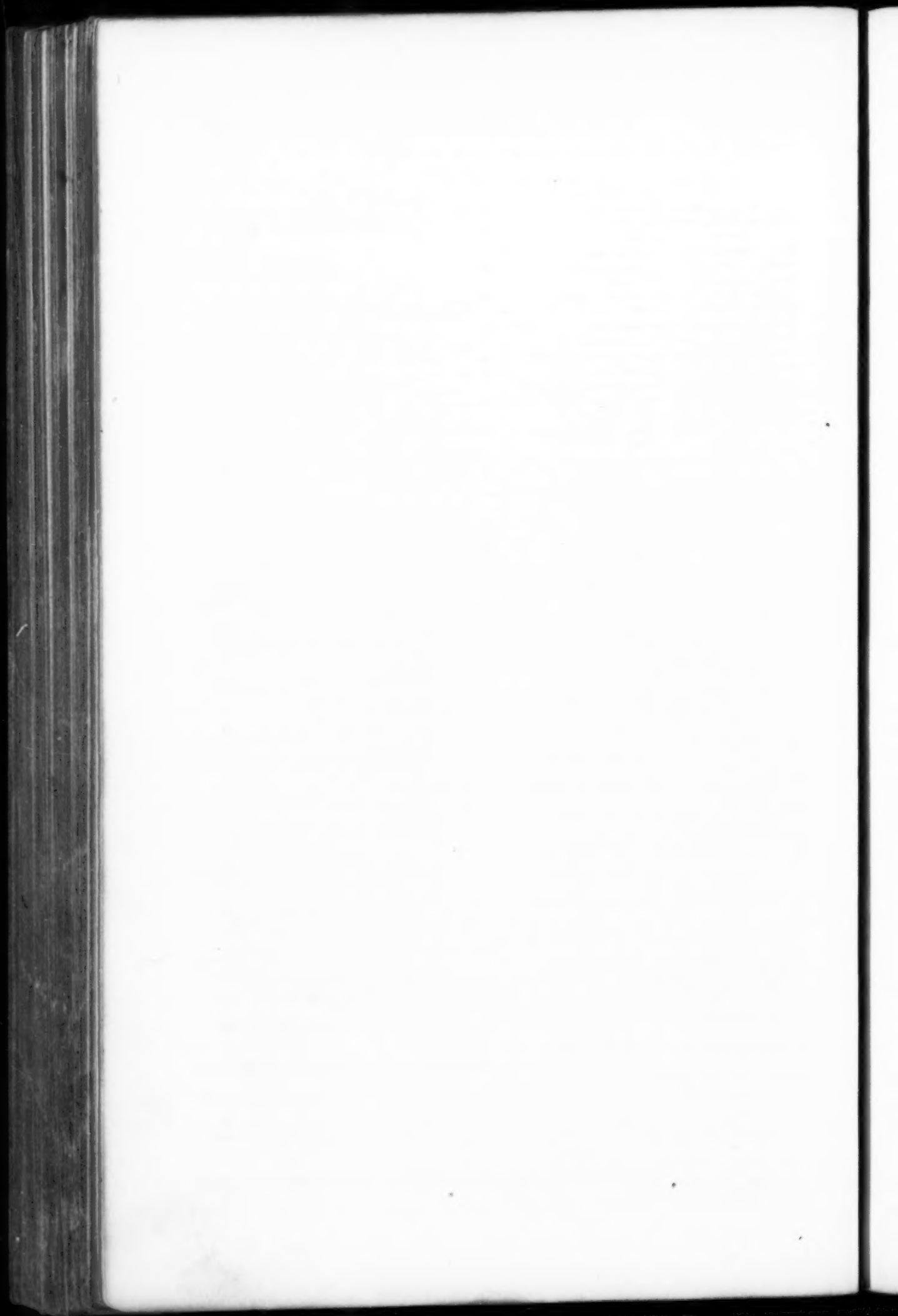
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LITERARY NOTICES.

LINDA; OR, THE YOUNG PILOT OF THE BELLE CREOLE—a tale of Southern life. Quite a clever story by **CAROLINE LEE HENTZ**, author of the prize story of "The Mob Cap," "The Pedler," "Aunt Patty's Scrap Bag," &c. Published by **A. HART**, (successor to Carey & Hart.)

MEMOIRS OF A HUNGARIAN LADY: by **Theresa Pulszky**: with* a historical introduction by **Francis Pulszky**. These letters, published also by **Mr. Hart**, are evidently the production of a lady of good mind and family—with capacity to enter where ladies are rarely seen to advantage—the field of politics.

The author takes the side where ladies are ever found—the side of the patriots. She gives a high character to **Ujhazy**, the Governor of **Comorn**, now probably opening his little farm in some frontier territory, and, if he could forget the fall of his country, would perhaps be as happy in this land of freedom as a Roman senator at the plough. One meets with strange things in strange places. In these letters, we find the following notice of the famous **Tokay wine**:—

"Next to **Abauj** is the county of **Zemplény**, rich with verdant dales, often submerged by the **Tisza** (**Theiss**). With the splendid hills of the **Hegyalja**, where grows the well-known **Tokay**, it may be accounted the region of the most excellent vineyards in Hungary. That wine has its name from the borough **Tokay**, where the **Princes of Rákoczy** had their cellars; but the very best of it is not there, nor, as it is believed abroad, is it produced in the royal vineyards of those vicinities, but we find it in **Szegi**, **Keresztúr**, and **Maád** (small places), on the more carefully cultivated grounds of minor proprietors.

"The preparation of that liquor requires and obtains the most anxious care. The vintage does not begin till the last days of October, as the sweetness of the delicious beverage, wholly native to it, depends upon the full ripeness of the grapes, of which a part *aszu szollo* (dry grapes), shrivel up into raisins on the vinestocks themselves, and are squeezed to a pappy substance. In this state they are mixed with the must at the beginning of its fermentation, and produce the most exquisite wine."

Just published by **HAZARD & MITCHELL**, No. 178 Chestnut St. Phila., "**ANNALS OF PENNSYLVANIA**," long looked for and much wanted, has been laid on our table, by the estimable author, **SAMUEL HAZARD**. The accuracy and value of his "**Register of Pennsylvania**," and his "**United States Commercial and Statistical Register**," warrant the presumption that, in his **Annals of Pennsylvania**, every one who takes an interest in the history, progress and welfare of that great commonwealth will be amply rewarded. For ourselves, besides the assurance of the benefit we shall derive from **Annals** so full and authentic, the conviction that the success of the publication will benefit one of her most worthy and useful citizens, will give zest to the pleasure we shall find in its perusal.

There is, in these **Annals**, of course, much about **WILLIAM PENN**—but nothing in corroboration of the story of certain gallant transactions which, **Col. Bird** says, led or drove him from England—and which, it is presumed, may be accounted merely a piece of court scandal.

ALL ELSE was in type before we saw the letter of **Mr. S. Williams** in the last number of the **Ohio Cultivator**, opposed to the principles of political economy maintained in this journal, as connected with and essential to our agricultural prosperity. It shall be respectfully noticed in our next.

INDIAN CORN—FACTS TO BE ASCERTAINED WORTH KNOWING.—We wish some kind subscriber in New England, in Pennsylvania, and in Georgia, or some State south of the Potomac, would note the time of field corn beginning to silk, and the time when it is safe to be gathered—also the quantity by weight of fodder—blades and tops separately, where they are gathered separately, on an acre, or a measured portion of an acre. It is desirable, also, to ascertain the weight of the shuck. But we don't mean to include in this case the weight of the stalk of the large corn in the south, though we believe in the east it is all cut and fed together.

THOSE of our good patrons who subscribed originally in clubs of five or more, paying two dollars each, need not hold back until all can unite again for the next remittance, but, without waiting longer, will please forward at once to the Editor of "**The Plough the Loom, and the Anvil**," at his risk and cost, No. 79 Walnut street, Philadelphia. "**Procrastination is the thief of time**," says **Young**—we believe it was **Young**; and, says somebody else, we don't know who—"The smallest favours thankfully received" in the way of subscriptions.